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STRAY STRAWS
FROM DR. C. C. MILLER.

AT THE IOWA CONVENTION, 1⅝ inches seemed the favorite width for sections.

YORK'S "STINGER" says Jake Smith can spell better than I can. The spiteful thing!

BUTTER AND HONEY shall he eat, that he may know to refuse the evil, and choose the good.—ISA. 7:15.

THIS WINTER, so far, is one of extremes. The coldest I ever knew at the first end, and extremely warm for the past few weeks.

QUINCE JELLY made with honey, of exquisite flavor, is one of the delicacies mentioned as on exhibition at a French bee-keepers' convention.

BROTHER ABBOTT, of Saint Joseph, says it's all a mistake about sweet-clover honey being dark. No finer honey in the United States.—*A. B. J.*

"DO BEES ever swarm without having built queen-cells previously?" is a question asked in *A. B. J.* The 25 witnesses don't agree in their testimony.

LAST GLEANINGS might be called a special number on Bees vs. Fruit Culture. Might send a small boy with a copy to the esteemed editor of *Rural New-Yorker*.

GALLUP occupies 1½ pages of *A. B. J.* with a glowing description of Orange Co., Cal., and the wicked printer heads it, "By Dr. E. Gullup." But Gallup would't *gull* any one.

IF FORMIC ACID, as now seems settled, comes through the blood of the bee into the honey, shall not some of us have to change our notions about feeding for winter, and feed more slowly?

GLEANINGS is getting to be so prompt about appearing on time that it reminds one of the old times when it was after all the other journals with a sharp stick when they were a day late.

MEMBERS of bee-keepers' societies enjoy special advantages in Europe. They get bee-journals at reduced rates, or free, and in one of the journals I saw an invitation for manufacturers to send in notice of the rebate they would allow members on purchases.

"THE REAL SOURCE of formic acid in honey," at which I have already hinted, is given in an able article by Dr. Planta, and nicely translated for *A. B. J.* by Frank Benton. Exit Rev. Clarke's "drop by drop from the point of the sting" theory.

THE SPECIAL FLAVOR, very agreeable but hard to define, found in butter on the breakfast tables of English hotels, as well as of some Swiss hotels patronized by the English, is, according to the *Bourgogne Agricole*, due to the presence of honey in the butter.

I ALWAYS HATE to see any one try to have the last word. Now, I wouldn't do a thing of that kind; but I merely rise to inquire, anent that third paragraph on p. 61, whether it was the stacked-up hives or closing the door that stopped the robbing in the honey-house.*

NOW THAT REV. CLARKE'S "drop by drop" theory is exploded, will some one demonstrate that a sting can't be used for a trowel? Or why can't Bro. Clarke be candid enough to arise and explain that there never was any basis except a vivid imagination for the "sting-trowel theory"?

WHILE BREAKING OFF from the habit of chewing tobacco, Dr. Trask advises that the patient take a chew of coarsely powdered gentian root, about equal to the ordinary quid of tobacco, after each meal. Within a few weeks the cure will be complete if the patient has strictly abstained from tobacco during that time.—*Medical World.*

BEES' EYES, according to Tony Kellen, in *Lux. Bienen - Zeitung*, do not accommodate themselves to a weak light nor to a dazzling one. Bees thrown in the air at dusk, a short distance from their hives, circle around in the air, and finally fall to the ground without finding their homes, while the dazzling light on the snow has much the same effect.

* Both, doctor. The stacked hives eased things up.—ED.

W. A. Pryal (*A. B. J.*) thinks that the great fatality attending the mailing of queens to California results from the candy becoming too dry as it enters that sunny clime, and that there should be a return to the old plan of little water-bottles. Confectioners make a candy dry outside and soft in the middle. How would that do for California shipments?

Robbers. Boil for a few minutes a handful of tobacco or cigar-stumps in a gill of water, and you have a not costly chemical product that will put to route, like enchantment, an army of robbers. Apply a few daubs of it at the points where robbers try to enter, and they are totally driven away for a long time, when the application must be renewed.—*L'Apiculteur.*

Foul brood. Dr. Wm. R. Howard (*A. B. J.*) claims to have proved that "the queen does deposit eggs in cells containing the dark, coffee-colored dried mass" of foul brood; that honey is also stored in such cells, and sometimes capped, and that stores and bacilli live in such honey indefinitely. That's not according to Cheshire, perhaps, but it's according to the belief of most practical bee-keepers.

Honey in butter, as mentioned in another Straw, an ounce to the pound, has a twofold purpose: To improve the flavor, and to prevent the butter from becoming rancid. If an ounce of honey were sold in this country for every pound of first-class butter, there would be quite a boom in the honey-market. Is there a dairyman in our ranks to try the thing, and report his judgment as to the effect of honey in butter?

That notched scraping-knife, on p. 60. It seems, Ernest, that I didn't make clear what my chief objection was. It was that it took too long time to set that notch at the right place to work—somewhat in the same way it takes too much time to set loose hanging frames at the right distance. But a half-hour's trial will convince you better than an hour's argument. And just you try that notch at the end of a long springy blade!

MANUM IN THE APIARY.

INTERESTING EXPERIMENTS IN QUEEN-REARING; MANUM'S NUCLEUS-CHAMBER.

By A. E. Manum.

"Here we are, Mr. Daggett, at the Williams yard, and here I have a horse-shed connected with the honey-house, as you see, with double door to the honey-house, so that I can back my wagon into the honey-house when necessary; and, by closing the doors, I can load my honey without fear of robber-bees."

"What work have you got to do here to-day, Manum?"

"Just about the same that I had yesterday at the Meach yard, with the addition of looking over a few of my experiment hives, which I will leave for the last thing before we return home; and since you are acquainted with Judge Williams—I suppose I should give him the title of 'President,' since he is President of the State Humane Society—you might make him a call of an hour or more."

"Manum, I guess you are going to have a call."

"Yes, I think so. That is Mr. Cox, who has an apiary four miles north from here. How do you do, Mr. Cox? You seem to be in a hurry."

"Yes, Manum, I am somewhat, though I have left my 12-year-old boy to hive the bees should any swarm while I am away. I have come over to borrow a foundation-fastener, if you have an extra one you can spare."

"Oh, yes! I have one right here that you can have as well as not. Are your bees doing pretty well?"

"Yes; the past two days have been favorable, and all are at work in sections; and as basswood promises a full bloom I wish to get more sections ready," says Mr. Cox.

"Are you *sure* basswood will give a full bloom this year, Mr. Cox? I am not so sure of it. I have seen but a few trees, it is true; but those I have examined promise only a partial bloom. I find no buds except at the top of the trees and at the very tips of the branches; and I have come to the conclusion that we shall get only about a third of a full bloom. It may be, however, that, in some localities, they will bloom more fully. It is well enough to be ready, however; but at the same time I would advise you not to get too many sections ready when the basswoods promise so sparingly. I have been caught so many times that I have learned to be very careful unless there is a prospect that we shall get a full bloom."

"What is the matter with that colony? and why do you shake the bees off the combs in front of their hive?"

"Well, I will tell you. Twelve days ago I gave them a virgin queen, and I opened them to see if she was laying, and I find they are queenless."

"Well, but you did not look for any eggs. How can you tell that they are queenless?"

"By their actions, and the mournful hum I hear. Do you see they are not clustered in any particular place in the hive? They are in all parts of it, and appear very much in trouble. Doubtless their queen was lost in mating, and I will now give them another if I can find one in my queen-nursery that has just hatched, as they will be more apt to accept a queen just emerged from the cell than one three or four

days old. Yes, here is one just cutting her way out. I will assist her."

"Manum, why don't you introduce the cell and let her hatch in the hive? That is the way I have done several times. I first melt a little wax on my hot smoker-tube, and seal over the end of the cell and cause her to gnaw her way out again."

"Mr. Cox, I dare not do that way. I used to do so, but I now prefer to allow the young queen to hatch, that I may see her full form before introducing her; because I often find young queens without wings or with imperfect wings, while some of them are small, inferior queens, even from large cells; and, furthermore, I am particular as to the form of my queens more than I am about the color. I want strong robust-looking queens. I don't like long, slim, peaked queens, as I have an idea that the workers from such long slim queens are not as large, as a rule, as those from broader, thicker, stouter queens. I look to my queens for a honey crop more than to any thing else about the apiary."

"Manum, I want to know why you shook those bees in front of the hive. You did not tell me."

"Oh! excuse me. I switched off on to another track, and lost sight of your question entirely. I will now show you. Here is the virgin queen, which I will drop among the bees that are now running into their hive at a lively rate. You see she is as lively as you please, and they pay no attention to her. I shook the bees out for this purpose, to draw their attention, as it were, to one purpose—that of getting back into their hive as soon as possible; and upon returning they find they have a queen with them which they accept as readily at this stage as they did the first queen given them, and which is now lost. I find this much the safest plan after a colony has lost one queen. Had I dropped a queen three or four days old into their hive without disturbing them, as I did by shaking them on the ground, they might have balled her—in fact, two out of five would be balled; hence this precaution in my out-apiaries, where I visit them only once a week."

"Well, there, Manum, it is 11 o'clock, and I must hurry home."

"Now, Mr. Daggett, you have returned just in time, as I am now ready to open up my new-style nuclei. You will observe this hive is "tiered up," or, rather, the cap to the outside case is raised four inches, resting upon four blocks, one at each corner. This is to allow the bees and young queens to fly out of the upper story, and still have a covering over them to protect the inner hive from the sun and storms. There, this upper story is simply a shallow brood-chamber, half the depth of my ordinary chambers, and the same size otherwise. I have a perforated zinc bottom to it, to prevent the old and young queens from passing either up or down. This thing is certain—the honey full colony which has an extracting super over it; hence this super is between the main brood-chamber and the nucleus-chamber. There is, therefore, no hindrance to the storing of honey on account of having this nucleus-chamber on the hive. This nucleus, or queen-rearing chamber, has three partitions making four apartments. Each apartment holds three frames, and is a nucleus of itself, with its own entrance, or outlet, where the bees can fly out under the cap of the hive as above stated; and by having the entrances each on a different side, there is no confusion of the bees, as you see each end apartment has an entrance, one on the north side, the other on the south, and one of the center apartments has its entrance on the west, and the other on the east sides.

"But, Manum, if you take bees from some other colony for these apartments, will they not quarrel with the main colony below, since they can mingle together by passing through this zinc bottom? I can readily see that the warmth from the main colony below is very serviceable in assisting the few bees in these small apartments in keeping up a proper temperature cold nights."

"There is no quarreling, Mr. Daggett, for the very reason that I do not bring bees here from other colonies. I simply make use of the bees belonging to this main colony; and here is where is the gain. I do not have to rob any colony of bees to start my nuclei, by this plan, as the bees from below readily come up and occupy the combs; and to make sure of this I aim to have a little brood in each apartment; and as nearly all the bees that take possession of these small apartments are young, I have no difficulty in making them accept a virgin queen, or, at least, I have succeeded in nearly every trial. While I expect some failures, the gain in the saving of bees for queen-rearing, as well as the even and proper temperature given from below, will more than offset the few failures I may have in introducing virgin queens into these small upper apartments for the purpose of having them fertilized."

"Are you sure that this perforated zinc will prevent the virgin queens from passing down below?"

"No, I am not sure; in fact, some, I feel sure, have done that trick; but as there is another zinc under the extracting-super, they are less liable to get down into the brood-chamber where the old queen is."

"There is another point, Manum, which I wish to bring up in regard to swarming. Will not these virgin queens which are directly over the main colony where the workers have access to either apartment cause undue swarming?"

"I think not, as there is quite a space between these small apartments and the main brood-chamber, which space is occupied by ample surplus room, and there are four entrances

above [illegible] ROYAL (A. R. [illegible]ish to fly out. Right here I will add that I am not sure but that, if we should have entrances to all of our hives near or at the top, as well as *large* entrances at the bottom, we should be the better able to control or prevent swarming. We will now go to another hive where I am trying to prevent the swarming fever."

Bristol, Vt.

SWEET CLOVER AS A FORAGE AND HONEY PLANT.

A VALUABLE ARTICLE.

By H. R. Boardman.

I am surprised that any bee-keeper of experience, who has had a reasonable opportunity of observing, should report sweet clover any thing less than a first-class honey-plant; and yet I am aware that there are a few adverse reports coming from very reliable sources.

I am quite sure—yes, I think I know from my own experience and observations with this plant, extending through a period of a dozen years or more—that it is unsurpassed, and equaled only by the noted alfalfa; and these convictions are supported by the opinions of some of the most practical and reliable bee-men of my acquaintance.

The last season was the first for several years when white clover alone yielded me any surplus, and this, too, with the fields white with its bloom in every direction as far as bees could fly; and yet I should not be warranted in claiming that white clover was not a good honey-plant. It has a world-wide reputation that is unimpeachable. If it were no more abundant than its cousin it would hardly have gained this enviable reputation—certainly not in the last few years.

I think it has been generally conceded by practical bee-keepers that it will not pay to plant for honey alone. This conclusion is undoubtedly a safe one. We must, then, look for some other value besides that of honey, in order to recommend sweet clover as a field crop.

AS A FORAGE-PLANT.

I once supposed, as most people do now, that sweet clover was entirely worthless as a forage-plant for stock—that nothing would eat it; but I have demonstrated to my own entire satisfaction that horses, cattle, and sheep, will not only learn to eat it, but will thrive upon it, both as pasture and dried as hay, and that hogs are fond of it in the green state. I say, they *learn* to eat it, because most stock have to acquire a taste for it, not taking readily to it at first. I gave it a fair trial for pasture last summer. My horses and family cow fed upon it almost entirely during the dry part of the season. They became fat and sleek, without the help of grain or other feed. The milk and butter from the cow showed no objectionable flavor. The amount of feed furnished was something surprising. It has a habit of continually throwing out or renewing its foliage and its bloom; also, when cut or fed back, it keeps it constantly fresh. After gaining a growth of four or five feet in height in dense masses in my pasture it was fed down entirely, even the coarse stalks, so that, at the close of the season, nothing was left. The seeding was, of course, destroyed; but in my desire to put to a severe test the feed value of the crop, this was lost sight of.

Sweet clover, like the alfalfa, sends its great roots deep down into the hardest, dryest soils, thus enabling it to withstand severe drouths as no other plant can. This gives it great value as a fertilizer; and growing as it does upon the hardest, poorest soils, it recommends itself for reclaiming soils too poor for raising other crops. It has a habit of taking possession of vacant lots and roadsides, which has caused some alarm with those unacquainted with its habits, fearing it would spread over the fields and prove a pest. I can assure you it will do no such thing. In all my acquaintance with it I have never seen it spread into cultivated or occupied fields to any extent. I have been very reckless with the seed about my own premises; and if there had been any danger in this direction I should have found it out long ago.

Some time during the latter part of last summer I made a trip through a part of the State where a severe drouth was prevailing. The cattle and sheep looked gaunt and hungry, and were roaming over pastures that were dry, scorched, and dead. Fire had run over the farms here and there, adding still farther to the look of desolation. In places the cows had been turned into the growing corn, the only green forage in sight. I wondered again and again how it was possible for the stock to escape entire starvation. A field of sweet clover, with its dark-green foliage, would have made a refreshing picture amidst this desolation. It would have been more than a picture. It would have supplied a place where it would have been most heartily welcome and appreciated in this trying emergency. I think it will recommend itself and come to be appreciated soon in such times of severe drouth. It makes a slender growth the first year. It is this crop that is the most valuable for hay, and cutting it will not interfere with the second year's growth. The second year it grows coarser; blossoms, seeds, and dies root and branch. If cut for hay in the second year it should be cut just as it is beginning to bloom. A second crop may be cut late in the season. It should be well dried, and it requires good weather to do it in. If cut for seed it may be thrashed and hulled with a machine like red clover, or the seed may be sown without hulling.

Now, don't be induced, by the bright picture

I have drawn, to seed your whole farm to sweet clover, for it would result in an unprofitable failure, I am sure. But if you desire to test its value, do it on a small scale, with an acre or two, and do it thoroughly. I have found it no easy thing to succeed in making it grow as a field crop, and I would advise sparing no pains in getting it started. When once it gets possession of the ground it will stay if allowed to ripen a late crop of seed. Sow with winter wheat or rye in the spring, the same as other clover. Please don't write me for seed. I have none to spare.

East Townsend, O., Jan. 7.

DOES ALSIKE CLOVER PAY?

WILL GROW ON SOD LAND; A SUBSTITUTE FOR BASSWOOD, NOW BEING RAPIDLY CUT OFF.

By M. M. Baldridge.

Under date of Dec. 24, 1893, a correspondent in Hamilton Co., Neb., writes me in substance, in regard to alsike clover, as follows:

Mr. Baldridge:—I have now grown alsike clover about six years. At present I have about 80 acres of it, but I expect to plow it up the coming spring. The dry weather of the past year has about used it up. I cut the past season some 70 acres of alsike for seed, but the drouth was so severe upon it that I got only 55 bushels. One year I cut 63 acres of alsike for seed, and got an average of 4 bushels per acre. I shipped the seed to Chicago, and it netted me $8.15 per bushel. Last fall I plowed up 80 acres of alsike and seeded the land to wheat. The land, owing to drouth and too close pasturing, had become weedy. I have now 110 acres of alsike mixed with timothy. Some of this I intend to cut for hay, and use the rest of the land for pasture. Alsike does well on land too wet for red clover. With me it seems to seed best in moderately dry seasons.

I have sown alsike on timothy sod, also on wild-grass sod, and with grand success. With plenty of moisture the seed will catch and grow on almost any kind of land already seeded down to grass. I have never seeded land with alsike in the fall; but if sown with rye or wheat, and early, I see no reason why it should not winter all right. When sown early in spring, on rye or wheat, it makes a good catch, and is a success.

I keep a few bees. Alsike makes a good bee-pasturage, and the honey therefrom can hardly be surpassed in quality.

Now, dear reader, please send me *your* report on alsike, in case you have one, no matter whether favorable or otherwise. The bee-keeping fraternity wants all the facts about alsike it can get. Owing to the rapid destruction of basswood we desire to supply its loss with something that will be at least its equivalent. It is my belief that alsike clover is the very thing we want, and is a profitable substitute for basswood. I have kept bees for many years where basswood abounds, and have had more or less experience with alsike, and I have concluded that I should much prefer to depend on alsike for honey. One thing is certain—the honey from alsike is superior to that from basswood, and gives far better satisfaction, as a table sauce, to consumers generally. At least, that has been my experience.

The reader will please notice, in the letter from Nebraska, that *sod* land, of any description, will do to sow alsike seed upon. This is a fact very important to know. It is by no means a new fact to the writer, nor to several others in this vicinity; but it may be new to the multitude. The present winter is just the time to scatter alsike seed upon sod land. The melting of the winter snows and the early spring rains will be certain to cause nearly every seed to germinate and grow. Try a few acres at least, and note the results. Utilize the roadsides and the waste places everywhere, and especially the unused land of the railroads. If you own no land, try to induce some of the farmers, whose land is within short range of your bees, to give this plan of getting a start with alsike a trial. You can afford to make your farming friends a present of enough seed to keep every bee you own at work while the alsike is in bloom. But it is not necessary to do this, nor is it *policy* to do just that way. The better way is to supply them with seed at your own expense, and then have them repay you as soon as they ascertain the fact that they can afford to do so. This plan does not excite suspicion that you alone have an "ax to grind," and that you are on the hunt for some one to furnish the grindstone.

On sod ground, or when mixed with timothy seed, two pounds of alsike seed is plenty for one acre. Four pounds of alsike is plenty for one acre when sown alone. I have no alsike seed for sale, so please don't write me for any. I presume Mr. Root can supply the readers of GLEANINGS with all the seed they may want.

St. Charles, Illinois.

POISONOUS HONEY FROM YELLOW JASMINE.

BEES AVOID IT WHEN THEY CAN GET HONEY FROM OTHER SOURCES.

By J. P. H. Brown.

In reply to the question you ask in your foot-note appended to the article on yellow jasmine, by Mr. M. Arter, page 24, I beg leave to say that my apiary is surrounded for miles by yellow jasmine; and from a close observation for nearly a fourth of a century I am prepared to give facts. It belongs to the composite family of plants, and is known in *materia medica* as *Gelsemium sempervirens*. The roots, leaves, and flowers of the vine are all highly poisonous, and very rapidly reduce the nerve-power and the force of the circulation. A few years ago a neighbor of mine lost a child that chewed and ate the flowers. The honey that is gathered from the bloom is also very poisonous, as I know

of several persons who came near losing their lives by eating it. The "old gentleman" referred to by your correspondent is correct in his observations.

In my latitude the jasmine commences to bloom in February, and often continues till the last of March; but if there is much rain and wind the blooms drop very soon. The honey-bee does not work on it from choice; for when other bloom is yielding honey at the same time, the jasmine-flowers are seldom visited. Italians work on it more than the blacks; in fact, it is not often you see a black bee on it. Its flowers yield more pollen than honey, and I have found that what honey is secreted by the nectaries is used up in breeding. None is ever stored, except it may be in queenless colonies. Hence the "old gentleman" is correct in observing that jasmine honey is never capped.

The poisonous effects of the jasmine are observed upon the newly hatched bees after they take their first meal. They act at first as though intoxicated; then their abdomen swells up; they crawl out of the hive, and die. If the colony is very strong, and hatching brood rapidly, a pint of dead young bees can often be found in front of the entrance inside of 24 hours. The mortality ceases as soon as the jasmine bloom is over. It is also a fact, that, if sugar syrup is fed at this time to draw the bees' attention from the bloom, there is no mortality. The same occurs if there is a stress of bad weather to keep the bees at home. The young of black colonies are rarely ever affected in this way by the poison, because the blacks work but little on it. I have observed the workers also to be at times affected, but not to the great extent that the young bees are.

Augusta, Ga.

[Dr. Brown has given just the information we called for, and it is the more valuable because it confirms the article on page 24. Dr. B. says the newly hatched bees, after eating of the yellow-jasmine honey, appear at first intoxicated; then their abdomen swells up, and they crawl out at the entrance, and die. These are some of the symptoms of bee-paralysis (nameless bee-disease); and while that disease is prevalent in the South, it is *possible*, in a number of cases where bees die thus, that they are supposed to be affected with paralysis, when it is simply caused by jasmine poisoning. Those who are acquainted with the disease, or are situated in localities where no jasmine grows, will not make the mistake. Here is something further on the subject:—ED.]

Mr. Editor:—There are millions of jasmine-blooms every spring within a half-mile of my bees; and, as Bro. Arter says, the fragrance of its flower is very delightful; but the bees *positively* do not work on it in this vicinity, nor is there any poisonous honey in this section.

We are having *hot* weather here at this time —60 to 80° in the shade, and my bees are bringing in pollen from sunrise till dark. Every colony is storing pollen to-day. Is this a sure sign that they *all* have laying queens?

Cat Creek, Ga., Jan. 10. J. B. GRIFFIN.

[No, not necessarily.]

RAMBLE 101.

BEE-PASTURAGE AND GOLD-MINES; LYTLE CREEK CANYON.

The location of an apiary in the brush, however, as recounted in our last, has its uncertainties, and especially so if located within the irrigation district. That good location, with its square miles of sage and other honey-producing plants, is liable to be sold to the home-seeker, and he is liable any day to find the brush falling before the ax of the recent purchaser, and he is ordered to move his apiary. In a majority of cases a bee-keeper would not think of moving the bees to the home place, but seeks some place beyond still in the brush or in the canyon. Perhaps the home place contains ten acres of land. It is about all set out to fruits of some kind. His land has cost him at least $100 per acre, and the addition of his fruit-trees, and the water-taxes, etc., have increased the value; then fruit-trees have to receive thorough cultivation and irrigation. The movement of one or two hundred colonies of bees to the home ranch then means the occupation of valuable ground. It furthermore means that my ten acres is surrounded by other people owning their ten acres; therefore the bees, when so cross as they are in this climate, especially in the height of the honey-season, are liable to attack any or all of these surrounding neighbors. Then after considering the neighbors and the valuable land, the wider grows the settlement and the further the bees have to fly to find the nectar, until the journey, at length, is too far to be performed profitably.

Mr. Sealer's apiary was thus located upon what is now wild land belonging to the Land and Water Co.; and, being a little anxious about the future of his honey-pasturage, he desired to explore Lytle Creek Canyon for fields that were new and unoccupied. We therefore set our faces that way. The country seemed quite level, but our pony seemed to think it a little too much up grade for her to make fast time. We concluded that she ought to know, so she was allowed to take it at an easy gait.

As we approached the foot-hills we found the surface of the country to change from the stoneless and rich loam to lands that were almost covered with boulders, not large but numerous. But even here we found government land claimed, and the squatter was industriously piling up the stones and improving the land.

"Why," said I to Mr. Sealer, "just as though

there were not land enough in this country without taking up land upon which they have to put so much hard work, to clear it and fit it for the production of crops."

"Yes," said Mr. S., "it looks that way; but this being government land it is obtained very cheap; and after the stones are removed the land is excellent for the production of crops, and especially for fruits."

Lytle Creek Canyon runs back far into the San Bernardino range of mountains, and the lively stream of water that flows from its mouth plays a very important part in making thousands of acres of land produce most bounteous crops. Two rival water companies run their ditches in here side by side, and the proximity and the clashing interests have been in the courts. The Grape Land Co. is putting a long and expensive tunnel through a spur of the mountain, and proposes to strike about twenty feet under the bed of the creek above, claiming

"Exploring the Tunnel, Big Foot Bill."

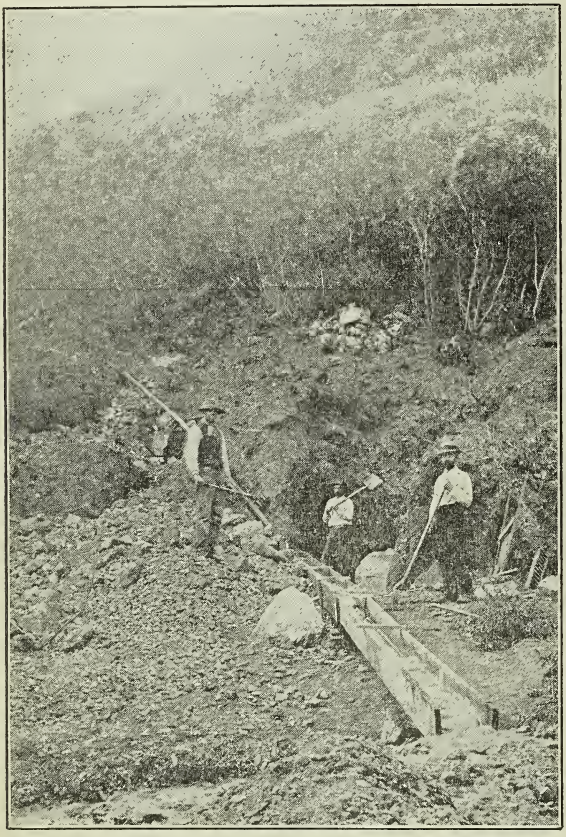
to take the underflow, while the other company will have the surface flow. Thus do interests conflict here over the little streams of water.

A bee-keeper of some local note has an apiary a short distance within the canyon. He is not noted, however, for the size of his apiary, which is less than 100 colonies, nor for the size of his honey-yield, which was not large; but he is noted for the size of his pedal extremities, and this apiarist is known far and near as Bigfoot Bill. When Mr. Sealer repeated this name to me I was anxious to see the owner of it. My imagination pictured a man with an enormous foot. It was soon our good fortune to find the gentleman. He was employed in helping to drive that water-tunnel to its completion; and instead of meeting a deformed specimen of humanity, limping around with one enormous big foot, I found a splendid specimen of young man, a six-footer, straight as an arrow, with a courteous bearing, and known by the civilized name of William Ingalls. I could hardly see that his understandings were much out of proportion to his body; but owing to his feet being athletic, as well as his body, he had earned his soubriquet. Our friend William soon invited us to view the beauties of the tunnel. The mountain had been punctured to a distance of over 700 feet, and the hole was just about large enough for a man to walk through comfortably. We were each provided with a tallow candle, and our candlestick had a sharp prong on one side. In fact, we might say that it was nearly all prong, to enable us to drive it into a soft place in the rock, or in a seam, and then work. Our errand was, however, to see how other men had worked, and we followed our leader. Seven hundred feet does not seem a great way when we pace it off on the surface anywhere outdoors; but when we crawl, as it were, into a hole in the rocks that distance, it seems quite a journey; and that hole we came in at, as we look back at it, grows smaller and smaller as we advance, and we find ourselves wondering if the eternal rocks will fall on us. But William sets a good example, and walks ahead unconcernedly, punching the sharp end of that strong pronged candlestick into the rocks overhead to see if any of them are loose, and explains many things of interest in relation to tunneling for water.

William managed his feet well in the tunnel. They did not whirl around and the heel get ahead of the toes, as ducks' feet sometimes do; neither did they get crosswise and block up the tunnel. In fact, William and the rest of us, in the words of one of Watts' hymns, kept "right in de middle ob de road." We did not get to the full depth of the tunnel, however, for, as we neared the heading, we met the smoke from a recent blast, and were advised to avoid it by retreating toward that light at the entrance, which was now about the size of a full moon. I noticed that William was very careful to turn around on his heels. His toes might otherwise hit the side of the tunnel, but would hardly hit the top.

When we entered daylight again we found some Spaniards whirling a rude sort of blower which conveyed fresh air to the heading and drove the smoke out. Of course, the men at work in this tunnel were in a bachelors' camp, and I noticed that the cook, who was quite an aldermanic man in his proportions, actually possessed larger feet than our friend William. In fact, the big cook seemed to be tired carrying so much foot around, and was observing a reclining position on a bench. From the healthy looks of the men, however, he was on hand and on duty at meal times. Had I been

well acquainted with all hands I would have moved an amendment to that name, "Big-foot Bill," and substituted Big-foot Cook and Big-foot Camp. It occurred to us that tunneling is a very good business in connection with the bee-business. When you tire of working in the hot sun with the bees, then go into the tunnel and work in its cooling shades. Mr. Woodbury, treasurer of our State Association, it will be remembered, also has a tunnel into which he can retire for work and reflection. When we had seen all that William had to show us, we hoped him success in his tunneling operations, and also success as a manager of the busy bee, and continued our journey up the canyon.



PLACER GOLD-MINING.

Lytle Creek Canyon has been noted from the early settlement of this country as a gold-bearing locality; and about the first object that attracts attention upon entering the canyon is a large hill, half of which has been washed away by hydraulic mining. The person, however, who hydraulicked at such a rapid rate died (people in the full pursuit of gold die). There was some hitch in the after-proceedings, and that hill is left in a dilapidated and forlorn condition.

A little further along we came across two young men who were "in it," but on a small scale. They conducted water in a pipe down the hill, allowing it to flow through a long wooden trough, in the bottom of which were slats called riffles. The dirt is shoveled into the upper end of the trough, and what gold there may be in it is caught in the riffles as the dirt is washed along. The little fine gold dust that was thus secured was kept very choice in empty cartridge-shells. The camera caught a very good view of the mining operations, which will give the reader some idea of how the work is done. These young men were working hard with the pick and shovel, and were making about enough to pay for their victuals, or their "grub," as they termed it. They were thinking very loudly, that, if their luck did not soon change, they would seek some other business.

In another retired notch in the canyon a darkey owned a mine in which he claimed that he was getting $20 a day. The other fellows were, however, somewhat skeptical about his fortune. Seeing that our prospects were not flattering for gaining sudden wealth, and also finding that the honey-pasturage was not of a very favorable nature, we turned our pony's head homeward.

The search for gold seems to be very fascinating, and many men have spent the best part of their lives in this golden country prospecting and digging for the precious metal, and still have never made their fortune, and sometimes barely a living. Every piece of loose dirt all through this canyon has been worked over several times, and the marks of the pick and the little pile of dirt are seen away up on what would seem to be an inaccessible cliff on the side of the mountain.

If the young men we met, who were toiling for such low wages (some days they said it was ten cents) had turned their attention to the production of honey, even in this canyon, the profits from the golden drops gathered by the golden Italian bees would have been much greater than can ever be expected in an old worn-out mining region. As we journeyed homeward these were the reflections of the

Rambler.

CALIFORNIA ECHOES.

BY RAMBLER.

Mr. G. K. Hubbard is now smiling on bee-keepers in Riverside and vicinity, and introducing his patent hive.

What has become of Muth's honey candy, or caramels? We are sure they would tickle the palates of the lovers of sweets here in California. We don't like to see such things go up like a rocket and come down like a stick. We like to see them stay up.

The report of the Bee-keepers' Union, recently issued, is interesting reading. It might be termed "the Bee - keepers' Bunting - ram." When a fruit-grower is inclined to molest the honied dreams of his bee-keeping neighbor, turn that Arkansas-decision ram loose, and the troubler soon becomes very quiet. California bee-keepers should give the Union a cordial support.

There, now, Bro. York, please don't tack Jennie Atchley at the end of every short article in the Texas department. In the journal for Jan. 11th her name appeared six times on two pages. I had to pronounce the name so many times that, at the end, my jaws got to working as though I were chewing a hot potato. Jennie's name is a good thing, but you know the old proverb.

Wilder Canyon Apiary looks deserted. The proprietor is in the far East among the Green Mountains. "Recently," he writes, "the quail in my canyon shouted to me all last summer, 'Chicago, Chicago.' Now in my dreams, with a temperature at 20 degrees below zero, I hear them shouting, 'Come back here, come back here.'" The Rambler also has a faint idea that they shout, "Leave your gun, leave your gun."

There will be a chance soon for California bee-keepers to take advantage of the vast acreage of mesquite that grows on the Colorado Desert. Irrigation schemes are opening up that arid region for settlement. We hope to see the bee-keeper in the lead, as he always is. There will be rich pasturage out of range of the irrigation-ditches, which should be occupied. Of mesquite honey, those that are posted say it is beautiful.

That advice about getting bees out of rocks (see page 22) may work if the operator sits down by the hive for the whole three weeks. I tried that very plan, put the trap on at night, and climbed the rocks again the next night, and found every bee had worried itself to death; but even if I had caught the bees, the climbing of the rocks and the lugging of a dozen and one traps back and forth made the colony an expensive piece of property. I prefer to get bees some other honest way.

Mr. Pryal writes very interestingly in the *A. B. J.* about the safe way to ship queens across the continent. Will he now tell us how to ship queens safely from one part of this great State to another part of it? Last April Mr. Trickey, of Inyo Co., tried to get queens from South Riverside; but ere they arrived they were chilled past recovery. Mr. T. can not rear early queens in his county, and would buy from the warmer coast counties. Anybody who can supply Mr. T. with queens when he wants them will find a good customer. We hope Bro. Pryal will extend his experiments in that direction. It is a great deal better to work up one's own State than it is to try to manage a big continent.

I clip the following from the *Marysville Democrat:*

A couple of days ago, at the farm of G. W. Hutchings, seven miles north of this city, a bee-tree was found near the east bank of Feather River, which was cut to obtain the honey. After the tree was down on the ground, an investigation was instituted, and the honey located in a hollow about half way between where it was cut and the top. On cutting the body of the tree open they secured about eighty pounds of honey, eleven duck eggs, and a dead duck. It appears that a wood-duck had formed a nest in the tree, having entered to the cavity through a hole that originally was large enough to admit her body. After laying eleven eggs she had commenced sitting to hatch them, and, while so doing, the bees filled the hole with comb so she could not get out, and she died on the nest.

A NEW ENEMY TO THE BEES.

MR. MATHEY DESCRIBES IT.

The worst enemy of the bee is, according to a new naturalist, the thick "humpbacked fly," *Phora incrassata*—a black little fly with a well-defined hump. It has lately been observed in Germany, and also in Russia and Sweden, as a terrible enemy of bee-brood. This insect sneaks into the hive at the first opportunity, seeks out a still unsealed cell in which the queen has laid an egg, and from which the larva has lately emerged, and then, by means of a long ovipositor, inserts an egg of its own under the skin of the immature bee. This egg possesses a terrible tenacity of life; for after three hours this larva creeps out and bores itself deep into the fat of the bee-pupa, and the cell meanwhile is capped with wax. After 48 hours the larva of the *phora* sloughs its skin for the first time; but at the end of another day and a half it goes through the same operation again. A pupal existence of 24 hours suffices to give it a bodily length of a tenth of an inch. Now the creature sheds its skin the third time, makes its way toward the larva of the bee, devours the rest of it, bites through the wax capping of the cell, and creeps out of the hive at the entrance, to seek the ground outside in order to pupate, and from the pupa to become a perfect fly. If this does

not succeed, the transition from stage to stage takes place in the hive itself—the worst thing possible for the bees, for the newly hatched *phora* does irreparable mischief, so that the colony perishes.

PACKING VERSUS SINGLE-WALL HIVE.

DISADVANTAGES OF SECTIONAL BROOD-CHAMBERS.

By F. Greiner.

On page 344, 1893, Mr. Dilworth tells of his somewhat singular experience with packed and single-wall hives, which does not corroborate what has generally been conceded as a fact. My experience is in line with the great majority of bee-keepers, and I would not say one word about it were it not for the fact that I made just the experiment Mr. D. proposes. I will first briefly state how my double-walled hives are made. Outside siding of half-inch matched pine; inside siding of ¼ basswood, sliced in the manner of cut shingles. For packing, various materials were used, either chaff or sawdust, coarse or fine, or dried moss from the swamps, etc., the thickness of packing varying between two and three inches. Directly under the brood-chamber no packing was used, but a 1½-inch dead-air space was maintained by two sheets of tarred paper. For winter, old carpeting is placed on top of the frames, also a six-inch chaff cushion.

Now for the experiment Mr. D. proposes. Forty out of my fifty hives of this description were stocked up in the fall after the honey season. The first year, twenty; the next year, ten more; the next year, another ten followed. The last ten were stocked up the following spring. Some of the first-named forty hives were stocked up as late as Nov. 1, and had no chance to propolize and glue up the many cracks and crevices I had left on purpose. When I started into the winter with the first twenty I anticipated some trouble; but, to my surprise and great joy, the twenty colonies came out as bright and strong the next spring as any colonies I ever wintered in the twenty years of my bee-keeping. The little moisture which had gathered on the outside of the cushions did no harm, and disappeared soon. As average loss in these fifty hives, which I have had now for seven years, I can record less than five per cent; the single-walled hives average not less than thirty per cent loss, excepting those placed in the cellar; but even these have not done nearly as well as the packed hives, the difference not being so much in the loss of whole colonies as in the loss of individual bees in the different colonies.

The half-story as a brood-chamber has some advantages over the whole story, particularly when used singly and in the production of comb honey. But when we use two or more sections as one brood-nest, then the small size of the frames, and the lower sets not being readily accessible, are objections. It is fully twice as much work to look over 16 small frames as it is to look over 8 large ones, especially when we take into account that, in case of the small frames, the upper section must be lifted off to gain access to the lower one. When colonies are very populous this operation of lifting off and replacing the upper section does not go off as smoothly as it might appear on paper; the bees boil over in spite of smoke, and the readjustment is generally connected with more or less crushing of bees.

In moving to and from out-apiaries, the sectional brood-chamber does not help to facilitate the work, as two or more sections must be clamped together, which requires extra labor and fixtures.

I am not yet ready to discard the whole-story brood-chamber, even should I begin anew, but shall continue to use both, the whole and the half-story.

TO FASTEN FOUNDATION STARTERS IN BROOD-FRAMES.

I wonder if any method can be simpler and quicker than running them on with melted beeswax, or beeswax with a little resin added. Starch paste and glue are recommended by a few. The method of mashing in I have never tried, except in cases of emergency, and I am of the opinion that all these are slow methods. The melted-wax plan has always given me satisfaction, whether top-bars were grooved or not. The wax sets quickly, and frames may be used immediately after the operation.

When molding beeswax, the dish into which it is poured should be covered up to hinder it from cooling on the surface and thus causing the cake to crack. Should the cake, when cold, refuse to come out, turn the dish bottom side up, and turn boiling water from the tea-kettle over it. It will not stick long.

DZIERZON'S BAR-HIVE.

Up to the present day Rev. Dr. Dzierzon, the most noted bee-keeper in Germany, clings to his bar hive, and with it he accomplishes what many do not with the frame hive; but perhaps few have acquired the skill of a Dzierzon, and we are glad to accept the more convenient frame, although such may not be for the best of our bees.

PARTHENOGENESIS.

It has long been regarded as a law of nature, that there is no life without fertilization; but it really seems that some insects are an exception to this rule, and produce young without copulation and fertilization. This state of things has been called "parthenogenesis," and was first discovered by Dzierzon as a peculiarity of the queen-bee. Over a year ago, Metzger, of Hungary, asserted, and has since been trying to prove, that the queen, although she does produce life without copulation (in case of the drone) does not do so without fertilizing the egg

with the sperm produced by herself. I have always been loath to accept parthenogenesis in so far as the non-fertilizing of the drone egg was concerned, and I hailed Metzger's efforts with great enthusiasm, hoping he might unveil the mystery; but as yet no positive proof has been brought out. If we take a ripe egg from the ovaries, or from the oviduct before it has passed the spermatheca, then subject it to the same conditions as other eggs are in the brood-nest of a swarm of bees—if such an egg would produce a drone, then Metzger is disproved. It would seem like the solution of a great mystery if M. could prove his theory. In the vegetable kingdom we find the male and female generally united in single individuals; but not so in the animal. Hermaphrodism here is as yet a myth. Still, it is not impossible but that we may some time regard the queen-bee and her reproductory organs in the light of a blossom of a perfect-flowering strawberry-plant.

According to GLEANINGS, page 174, 1893, in Abyssina and Morocco smoking is prohibited by law. That is the place I want to move to, but my better half objects, on account of the distance. In this, our free and civilized country, the tobacco-slaves have driven me from court, caucus, election-hall, postoffice, etc. That's no credit to the country.

Naples, N. Y., Jan. 15.

[Your experiments, regarding packing versus no packing, are just as we should expect, and as our and others' experience proves. There is really no necessity for packing *under* the brood-nest. Our winter cases that do so well for us, protect the top, sides, and ends of the single-walled hives—bottom same as in summer.

The presser methods of fastening foundation are greatly inferior to the melted-wax plan. A still better plan is a heated plate, so arranged as to slide under the edge of the foundation melting its edge, instead of dipping the sheet in melted wax. We formerly advocated the presser method, but find the hot plate does the work more rapidly and at the same time economizes the foundation.

We are glad to get your experience on the sectional brood-chamber. We have not, so far, been successful in handling those chambers without having bees boil all over; and it is true, that it is twice as much work to handle over 16 half-depth brood-frames as the same surface of comb in full depth frames. It may be argued that it is not necessary to handle the frames; but it is sometimes, and perhaps more times than is in accordance with theory.

Yet, it is quite possible that there is a future for the shallow hives, because, it is true on the other hand, that much can be done without handling frames. To a lesser extent, this is true of full-depth hives. We should like to know more fully what your experience is along these lines.

FOUNDATION.

DO BEES ADD ANY WAX IN DRAWING IT OUT INTO COMB.

By M. W. Shepherd.

The article in the December 15th issue of GLEANINGS, from R. L. Taylor, leads us to ask whether bees ever thin the septum of comb foundation at all; if so, under what conditions? Do they ever pull the side walls of the foundation to make the cells? If so, under what conditions? We hear much about the different grades of foundation, such as light brood, heavy brood, etc. Now, is it any difference to the bees which they have? If so, what is it?

We have had a little experience in the matter, and it does not coincide with the generally accepted theories. Has any one ever weighed a sheet of foundation before giving it to the bees, and then after it had been drawn out into a perfect comb? We venture the assertion that, nine times out of ten, it will be found that the bees have furnished every particle of wax to make the cells of the comb, regardless of the amount of wax in the foundation. Sometimes bees make the base of natural comb much heavier than much of the artificial foundation. Why is it, if not because of an overabundance of wax secreted?

During the past season we found swarms of bees whose abdomens were literally covered with wax scales. Now, when put on full sheets of foundation what did they do with that wax—throw it away, or use it to build cells on top of the foundation? We don't believe it was thrown away by the bees; in fact, we can prove it was not.

We have often heard how much it cost to let the bees build their own comb. With due respect for experimentalists, we ask how you know that, under normal conditions, wax is not a spontaneous production, and costs the bees nothing to produce? It seems that an all-wise Providence would make no blunder in the matter.

BEES STINGING EVERY THING, AGAIN.

M. F. Tatman, on page 918, 1893, tells us about how his bees stung every thing on the farm, and, friend Root, you say it must have been caused by robbing. We shall have to differ with you right there. We handled bees in California that would sting in season and out of season. They drove people from their work, over half a mile from the apiary, and it was as much as one's life was worth to step out of doors without a veil over the face; yet all this was during the heaviest honey-flow I ever saw, and there was no robbing going on at all; but it was just the nature of the "Cyps," and it is possible that friend Tatman has a dash of that blood in his apiary.

Rochester, O., Dec. 25.

[Years ago, as some of our older readers will

remember, we weighed pieces of surplus foundation before and after it was drawn out by the bees. We can not just now place our fingers on the page and volume where these experiments are recorded; but if memory serves us correctly, the scales showed that the drawn-out comb weighed but a small trifle more than the foundation from which it was originally drawn, proving, in this case, that very little wax was added to the foundation. Combs two-thirds drawn out weighed just as much as the foundation. Other experiments showed that, bees put more extra wax on sometimes, than others. Particularly was this true when we used bleached foundation, as was done years ago. This is easily explained on the ground that, the bleached wax was much harder than the yellow, and the bees rather than *draw* it out, added to it. With ordinary soft yellow wax, such as is now sold, the results were as we first stated.

These experiments can be easily repeated. Weigh a strip of foundation before putting it into the section; weigh it after it has been drawn out into comb. Likewise weigh a sheet of brood foundation before and after it has been drawn out. In fact, we wish many of our readers would try this experiment, and report. Different localities, and the character of the honey-flow, whether light or heavy, will have an important bearing on the question.

Regarding those cross bees of Mr. Tatman's we would say that we do not understand that the bees were habitually cross, but only on the occasion he speaks of. We can account for *a sudden* disposition on the part of all the bees to sting everybody and every thing, only by robbing. We know there are many apiaries into which it is not comfortable to go without a veil; in fact, we have been in a good many such in our travels among bee-keepers; but they never, unless robbing has been going on, sting chickens, horses, posts, and other inanimate objects. If any one wants to see how bees can sting all at once, let him set out a few combs toward the close of or after the honey-flow.—ED.]

WILD-CUCUMBER VINES

SAID TO BE A PEST IN THE SOUTH.

By C. P. Coffin.

In a footnote to the article entitled "Raising Bees," on page 53, you advise the use of the wild cucumber as one of the most rapid-growing vines, and for that reason preferable for training on a trellis, to raise the flight of bees. If the vine you mention is the same that grows wild in this section, and known as "wild cucumber," it must either be bereft of its bad qualities in your climate or else you are unaware of the fact that it is one of the worst pests that farmers have to contend with, and that, at least in some localities, they would almost as soon have the Canada thistle on their farms.

The vine I speak of is, as you say, a very rapid grower, and would make, in a short time, a dense screen of luxuriant foliage; and this characteristic is the chief reason why it can not be kept down and out of the way by cultivation of whatever crop it is fighting with for "right of way," as I will explain further on. It gets its name I imagine, from its great resemblance to the true cucumber, both in foliage and fruit, for it has a fuzzy or prickly fruit, which looks a good deal like that of the domestic variety. But it also has in great profusion an outside covering of fine "stickers," or "prickles," that come away at a touch, penetrating not only the bare flesh but also all ordinary clothing, causing an insupportable stinging and itching that will last for days.

This vine finds a congenial home in the fertile low grounds of the Mississippi Delta. A few years ago, when I was living there, a small part of the plantation where I lived—some 150 acres of rich low ground, planted to corn—was infested with wild cucumber; and although the cultivation had been thorough, and the ground kept perfectly clean as long as the corn could be plowed, the vine came up and took possion in the fall, covering the ground and festooning the cornstalks completely, and making it a problem as to how that crop of 60 to 80 bushels of corn per acre could be gathered. This was the way it was solved:

Before hands would attempt gathering the crop, each man had to be furnished with a jacket and a pair of over alls of thick duck, to protect the body and legs, while long gauntlets and high top boots guarded the hands and and ankles. Even thus armored, few escaped scot free. So, you see, down this way if we used our wild cucumber as a bee-break we should be keeping off bee-stings with stings a hundred-fold worse.

On a trellis I used in the way mentioned, we yearly grow the different varieties or morning-glory, cypress-vine, cinamon-vine, maderia-vine, with success, making something very pleasing to the eye, as well as useful, while a permanent obstruction in the shape of rapid-growing trees is coming on.

Our only severe cold so far was early in the winter—40 to 65°. Weather for the past month is swelling buds, and many early plants are in bloom. Flowering quince is in full bloom, and bees are on every flower. We are digging new potatoes, and using for the table beautiful lettuce grown in the open ground. But the blizzards that come in the spring will, no doubt, change things before long.

Pontotoc, Miss., Jan. 22.

[Wild cucumber does not seem to be a pest here in the North, though it doubtless is with you. The original vine we had at our old home is still doing well, but does not seem to show any of the bad traits you refer to.—ED.]

TAXATION OF BEES IN PALESTINE.

HOW THE PEOPLE ARE PLUNDERED UNDER THE CRESCENT OF MOHAMMED; A HINT TO THE ENEMIES OF THE CROSS.

By Ph. J. Baldensperger.

Palestine is a small province belonging to the Turkish empire, as everybody knows. A pasha, or governor, is in command of Southern Palestine, reigning in Jerusalem. This, again, is directly dependent on the *wali*, or chief governor, of Syria, reigning in Damascus; but of late this has been erected into an independent governorship, or pashalik, depending directly on Constantinople. The pashalik of Jerusalem is about as it was in ancient times—Judea—though Philistia and Sharon should come under this jurisdiction. Sharon depends on the pasha of Nablous (a corruption of the Neapolis of the Greeks, and the ancient Sichem), while Philistia is under (or, rather, without) control of the reyem-makam—a sub-governor of Gaza, the city whose gates Samson carried off. Those governors and sub-governors command only as long as they have direct influence—in fact, in some places it is only robbing the peasants in harvest time and hurrying home loaded with treasure. Some villages are more daring than others. Philistia is open to highway robbery. In fact, the most dangerous is the direct road from Jaffa to Gaza; and only a few miles from each of the above-named cities it is still more so. Jaffa is also commanded by a sub-governor, or rayem-makam, a very daring Bedouin robber, who, carrying his exploits up to the gates of Jaffa, was taken hold of by four gensdarmes, near one of our apiaries, and bound to be taken to Jaffa ; but four Bedouins followed them, killed two of their horses, gave them a sound flogging, and told them to go and tell their master what they had seen and heard, and not to put their foot there again, and it was so. They never came again, and the robbery goes on. Two years ago the robber assassinated a very rich and influential man. A hundred cavalrymen were sent out to arrest him. He used to come around and chat with my apiarist, laughing at the squadron looking for him in places where he was not. A few days after, the captain and cavalry and the sub-governor of Gaza retired, not finding him; and Abu-Henna, undisturbed, went on to rob. Our apiaries were thus in the three divisions of land. Being on the borders, we had our apiaries very often in Philistia, while our machines and tents were put up in Sharon. This helped us subsequently a great deal.

The population of Palestine is mostly Mohammedan. There are very few villages in which are Christian natives belonging to different sects—Greek, Roman, and others. Bethlehem, and the village of Bethjala, have almost wholly Christian populations.

Our increasing apiaries, and the quantity of honey taken, awakened the jealousy of the authorities and also that of some villagers through whose ground we used to pass with our bees. Taxes are gathered in different ways in the different districts. In principle, the tenth part of all income is to be given to the government direct, but the officials sent to us were bribed by the villagers, and, of course, very little reached the treasury. Every system was tried, till at length taxes were put up at public auction, and those that paid most had a village to gather. Naturally enough, under such circumstances the purchaser would buy the mayor of every village, and some councils, and levy taxes at leisure. Thus one day, to avail themselves of the taxes in the village of Urtas, near Bethlehem, they resolved to make us pay a good deal more than was due. Bees are generally taxed at sixty paras (about 7½ cents) a hive. As this would not raise a big sum, they stated before the council of finances in Jerusalem that our big hives ought to be taxed differently, as yielding more honey. The council deliberated, and agreed to make us pay four times the price laid on the native hives. Accordingly the tax was put up to six piasters, government money, equal to about 30 cents; but even this would not raise the sum high enough, for they came and found only 180 hives. So, again, another trick must be contrived to extort more money. In a council of the village they concluded to say we had 1800 hives. This was a simple thing to do—a zero was put after the 180; but we refused to pay such a sum. After considerable arguing, I went to the governor of Jerusalem to declare that we had only 180 hives, and were ready to pay what was lawful, but not more. The governor was ready to help us, but he insisted that we really had 1800 hives, and made me stay quite alone with him. I could not then see why. When we were alone he addressed me in French. I was standing some distance off talking to his "excellency;" but when alone he put a chair beside him and asked me to sit near him, which I did, but still insisting on being ready to pay for 180 hives. He now tried to make me understand that he could arrange affairs; but as I did not understand the point, he bade me adieu and I left his presence. I heard ultimately he was full of wrath against me for not having offered him a sum of money. I went thence to the Court of Justice. The supreme court is held in the Turkish language and translated into the Arabic. Here again I met the same "Lord Judge." He walked up to me, and, hand in hand, we went through corriders and rooms to his "excellency," the governor. As I had had very little to do in these palaces I was not "up to the times." This judge asked, as I afterward heard at another trial, whether I would not bribe them. These "Lords of the Justice" are not satisfied with small sums, but we still hoped to get over the difficulty by referring to our consul-general,

and finally to our ambassador in Constantinople. Now, it may here be said we were four brothers, bee-keepers; and, having our apiaries in different parts of the country, naturally enough we could not all be in one place; and when the tax-gatherers came, an act of politeness was omitted by some of us. It is customary among Arabs to invite these officials to sit down, drink a cup of coffee, and converse about different topics (not the weather), and last, but not least, about the tax laid on; and, in a gentle way, to make one understand that his taxes are very high, etc., no matter what he has laid on. This had been omitted, I said, and the official's wrath at such reception got the village mayor and his municipal council on their side, by promising them a share in the spoil, while on our part my brothers warned them to be careful and mind our consul. But the officials knew better; and our consul, like all other consuls, as was proved afterward, was our representative to defend our *persons*, but has nothing to do with our *property*, and does not interfere in tax-gathering. A last act, or trial, toward mending affairs was begun after six months' arguing. In an assembly of Jerusalem nobility—the *Effendis*—are descendants of the great Mohammedan warriors and generals, Chalid and Houssein. I thought of appealing to their noble qualities, as representatives of holy men and guardians of the most holy temple at Jerusalem, to touch a chord of sensibility; but they took it as satire, and closed the question by condemning us to pay $150, O. S., equal to something over $600.

Nice, France.

(*Continued in our next.*)

HEREDITY.

By C. C. Miller.

The fight is still on, across the ocean, with regard to heredity. Mr. Metelli, in the Italian bee-journal, *Apicoltore*, asks the question, "Is it true that the exchange of the queen of a lazy colony for a queen of proved excellence often fails to change the natural qualities of the colony, and after the exchange it remains just as lazy as before?" To this he replies, that, according to his experience, with not many exceptions, a change of queens does not suffice, and thereby time, trouble, honey, and a good queen are uselessly sacrificed. This, he argues, is inexplicable on the ground that, from the queen, come all the characteristics and instincts of a colony. But the matter is no mystery on the ground of inheritance from the workers, if we concede that, in every fertilized egg, lie inclosed all slumbering instincts and characteristics of the race, both good and bad, in their various degrees, and that it depends on the special influence of operating circumstances, such as food, climate, etc., whether these characteristics shall develop more or less, in this or that direction, or one at the expense of the others.

That keen observer, Herr Reepen, quotes Dr. Metelli in the German *Centralblatt*, and replies that practice has sufficiently proved that the character of a colony changes on the introduction of a queen of another variety. A colony not given to swarming becomes a swarmer after the introduction of a Carniolan queen, and a cross colony in most cases becomes gentle after receiving a Carniolan or Italian queen. He gets in a sharp rejoiner by saying that, if it is true that a good queen of proved excellence is uselessly sacrificed when given to a bad colony, how does Mr. Metelli know that the queen removed was of bad character? and how does he know that the new queen is one of proved excellence, if the queen exercises no influence in changing character? In other words, how can you prove that a queen is excellent by the excellence of her workers, if those workers do not inherit their excellence from her?

Whatever may be the reply to this, it seems to me that we should not so much spend a great deal of energy in finding the reason for supposed facts, as to find positively what the facts are. And that should not be so very difficult. Say colony No. 1 is very cross, and No. 2 very gentle. June 1, exchange queens. Aug. 1, if the colonies have remained without change, we may conclude that the workers then present have inherited their dispositions mainly from the workers. If the colonies have exchanged dispositions, we may conclude that the disposition is mainly inherited from the parents. I say *mainly*, for it is possible that it may turn out that, while it is true that traits do come through the parents, and mostly in that way, still the influence of the food taken in the larval state may have no little influence on the young queen in deciding what characteristics she shall bequeath to her offspring.

Another test, perhaps more satisfactory, although taking a longer time, would be this: From the same batch of queen-cells let one be given to the bees of a very cross colony and the other to the bees of a very gentle colony, and then note the difference in the bees of the two queens thus raised.

The question of interest to practical bee-keepers—and it is an important one—is this: What attention, if any, am I to pay to the nurse-bees that raise the young queen? If the influence of the nurse-bees is even a very small one, we want to take advantage of that small part, especially as it will not be such a great deal of trouble to use our best workers to raise queens. No single observation, of course, can decide much; but if all bee-keepers have their eyes open during next season, and then report, the sum of the evidence ought to leave the matter practically settled.

Indeed, no little could be done if there were

gathered together all the experiences of the past, bearing on the question. While I have given in a previous number some reasons for believing in inheritance from nurse-bees, I must confess that all my observations of the past from actual experience, that I now have in mind, point in the other direction. In several instances I have killed the queen of a colony because the bees were very cross. In each case there was a decided improvement in the temper of the bees. Not only was the difference apparent as soon as the workers of the old queen had died off, but in at least two cases the difference for the better was decidedly recognizable before the time when these had had time to die off. Does that mean that the cross bees are confined to those that are less than a month old, or does it mean that the presence of the queen herself has some direct influence on the disposition of the workers? I think it is quite generally agreed that bees are crosser when queenless. Putting it in another shape, they are not so cross when they have a queen. Now, if the presence of a queen makes a difference in their tempers, is it not possible that the presence of one queen may produce an effect different from that of another? However, it is possible that, in the two cases of which I speak, some other cause, independently of the queen, may have been at work, thus making a difference in the temper of the bees.

Marengo, Ill.

HEREDITY IN BEES.

CHARACTERISTICS COME ONLY FROM PARENTS.

By Rev. L. J. Templin.

By heredity is meant that influence that parents or other ancestors exert in determining the qualities or traits of their offspring. That such a power exists was well known to the ancients; but the extent and importance of the law of heredity are but now coming to be understood and appreciated. Any one who attempts any reformation or improvement in mankind or the lower animals, or even in the vegetable kingdom, without taking into account the law of heredity, will soon find himself hopelessly groping in the dark. In considering the forces or influences that determine the characteristics of offspring, several different laws, partly modifying and partly complementary, must be considered. The first to claim our notice is—

THE LAW OF SIMILARITY.

"Like begets like" is the universal rule among all organic beings. The child, in all essential qualities, resembles the parents; the offspring is a duplicate of the immediate progenitors. We know of no exception to this law, except in the case of monstrosities. If it were not so, no reliance could be put in the course of nature. A mare might bring forth a calf, or a ewe might give birth to a litter of puppies. The offspring partakes of the traits of both parents, and, as a necessary consequence, must differ more or less from both. There seems to be no rule by which to determine the degree to which each parent contributes to the characteristics of the progeny. In some cases the young has a closer resemblance of the father, and in other instances the likeness of the mother is more striking; while in still other examples there is such a blending of the traits of both parents that neither one predominates. And it is possible that, in an occasional instance, there may be no apparent likeness of either. Much has been written on the question as to the degree and manner in which each parent contributes to the make-up of the progeny. But it is doubtful whether there is any law governing the case, except that the one of the purest blood and greatest vigor at the time of copulation will generally impress its peculiar traits most strongly on the offspring. The above law is modified, within certain limits, by

THE LAW OF VARIATION.

All organic beings have a tendency to vary from the exact likeness of the parent in a great many small and unimportant particulars, but always within specific limits. It is under the operation of this law that we expect the improvement of our stock by selection and careful breeding. Another method is by crossing different breeds or strains, or by hybridizing different species. These variations, doubtless, arise from well-established though often occult and unknown laws. Some of these causes are known, at least in part. Probably the most potent of these in determining the character of a new being is

THE LAW OF ATAVISM,

or, as it is often termed, of reversion. It is a fact of frequent occurrence, that, in raising improved races in either the animal or vegetable kingdom, undesirable qualities, that were supposed to have been long since "bred out," are found cropping out, to the disappointment and loss of the breeder. Thus a black or brown sheep occasionally appears, to remind us that the white race of sheep originally sprang from a black race. Many of the so-called freaks of nature are only reversions to the original type. This fact requires the utmost care and diligence in "weeding out" every specimen that does not come up to the desired standard, by the breeder who wishes to improve his stock. It is not enough that an animal be full-blooded, and possess the characteristics of the breed of which it is a representative, but it should possess them in an eminent degree to make it a desirable breeder.

Another thing not to be overlooked is the well-known fact that surrounding objects and influences, especially if of a startling character, often operate through the mental and nervous system of the mother, to impress on the em-

bryo physical, mental, and moral qualities that will be as lasting as life. Food, temperature, moisture, altitude, and possibly other conditions and influences, have a share in modifying the traits of a race of animals or plants, and should be taken into account. If the climate is rigorous, the race will become "acclimated," either by the less hardy dying off and leaving only the more enduring to propagate, or by some change in the constitution. A permanent supply of abundance of food tends to increased size, earlier maturity, and an increased disposition to take on fat; while a scant supply of food tends to reduced size, retarded maturity, and greater activity. But, of course, these changes are very slowly produced, and they are produced by a gradual change in the constitutional characteristics of the race. On page 921, 1893, Dr. Miller teaches that it is the food furnished the fœtus that gives it its distinguishing characteristics. A white cow bred to a black bull produces a white calf because the food that developed the embryo was furnished by a white mother. In other words, if I understand Dr. M., the color of the mother determines the color of the offspring. But, suppose the calf is black, roan, or pied, as it is just as likely to be as it is to be white. Where does it get its color then? Are all young animals the color of their dams? What has the food furnished the animal through the placenta, before birth, to do in forming the inherent traits of a young animal, more than the food furnished through the udder after birth? No man can say that it has any. Can the natural traits of an animal be changed by the food on which it is raised? Can a shorthorn calf be changed to a Jersey cow by feeding it on Jersey milk? Can a white child imbibe negro traits at the breast of a negro mammy? If so, an Italian queen can be given the traits of black bees by being raised in a hive of such bees. According to Dr. M.'s theory, she should be changed to a black queen. The food only nourishes and develops the latent powers inherent in the germ before the feeding began. The egg that produces the queen contains potentially all the natural traits of the race or races to which the parents belong. All that feeding can do in all ordinary cases is to enlarge and develop those potential forces. I am of the opinion that those persons of whom Dr. M. speaks, who have believed they had evidence that the character of queens is changed by the nurse-bees, are laboring under a mistake. The changes that they have observed in their queens, and that they have attributed to the influence of the nurses, most likely have been the result of some of the obscure influences mentioned above; or they have resulted from improper mating. The mating of queens is such an absolutely unknown quantity in a problem of this nature, that it is far more rational to find in it the key to any anomalous traits appearing in our queens, than to attribute them to a cause that does not operate, so far as we know, in any other part of the animal kingdom. I conclude that it is a perfectly safe method to do as Dr. Miller has done, and, as I suppose, most other queen-raisers have done, entirely ignore the character of the nurses to which eggs are committed for the raising of queens, provided they are populous in young bees, have abundance of food, and not a large stock of unsealed brood.

Canon City, Colorado, Dec. 28.

[If we are correct, Dr. Miller did not say that, in the case of mammals, the nurse might transmit through the food her characteristics of markings or disposition to an offspring of other parents, but that, from numerous observations, it seems *possible* that there may be an exception in the case of *the bee*. The bee, on hatching from the egg, is not a perfect individual. It hatches a *larva*, and it is then that it is supplied with a new food which helps to make it a perfect bee. In the case of mammals, the young is a perfect individual as soon as it comes forth into the outer world. The larva of the bee is not. Our correspondent has given us some interesting facts on this subject of heredity, and his article will be read with interest.—Ed.]

HOW TO ADVERTISE HONEY.

IMPORTANCE OF BUILDING UP A REPUTATION ON HONEY.

By Wilder Grahame.

Shortly before the honey is ready for market, but not until you are reasonably sure of its production and quality, place an advertisement in the paper selected, in which your trade-mark is given good prominence. A small advertisement will cost less, and, if well displayed, attract more attention than a larger one of poor makeup. I have seen half-inch advertisements that I should prefer as trade-bringers to other half-column advertisements in the same paper. Still, half an inch is rather small in a daily. Two or three inches ought to do the work if continued long enough. But don't go into the "want" column. It is worked to death, and not appropriate for a trade advertisement; at least, it should be supplemented by display; and the latter, if properly done, can do the work alone. Remember, too, that a little toad seen often gets acquainted sooner than an elephant appearing rarely. You want your advertisement to get acquainted and familiarize the people you are trying to reach with your trade-mark. Then when you are ready to place a small consignment of goods with the grocer who deals with this same class of readers, your trade-mark on the goods will attract their notice and remind them of what they have read about it. Even if they have not read it they will be familiar with the trade-mark, and the

sight of a familiar object in an unfamiliar place is sure to create interest.

Having in this way secured your audience and an occasiona sale, it remains with you to have the goods as nearly uniform and as uniformly perfect as it is possible by human ingenuity to make them. If the apiary is large, and the sales reasonably so, it would be most profitable to raise regular patches of white clover, etc., convenient to the hives, for the double purpose of economizing the time of the bees, and to prevent their introducing honey from other sources and producing a mixture.

It is not the work of a single season only, to build up a reputation, but one of years. Nevertheless it is time well employed. The reputation of A. I. Root, built up by advertising, and sustained by fair dealing, is an example of success in this line that has cost time, hard work, and money. But, without consulting him, I am not afraid to leave it to him to say whether he would not, even from a purely commercial standpoint, rather lose his present working-plant than his present reputation and eminence in his line of business. The former could be replaced much more readily than the latter.

It is evident, then, that, with a reputation once secured or growing in the locality desired, the greatest care is necessary that no inferior goods are ever allowed to creep in as first class. That trade-mark is a personal guarantee of the producer, the failure to sustain which would be as much of an impeachment of his reputation as a failure to meet commercial obligations.

There are, however, different tastes in people, and consequently may be several classes of what may properly be called first-grade honey. Some people prefer clover, some basswood, some buckwheat. I plead guilty to the last myself. But few like a mixture. If it is buckwheat honey, label it as such, and guarantee its purity with your trade-mark. If it is clover, ditto. Clover honey is as objectionable in buckwheat as buckwheat is in clover. Keep them as well separated as possible, and put no mixture on the market as first grade. Then as to prices, it is worth more than the common store grades; charge more. People will pay it after they have been convinced that it is of superior quality, and worth the extra cost.

It always happens that some honey, otherwise entitled to first rank, is in ragged or irregular combs. This, if absolutely pure and unmixed, may be extracted, and handled in the same way the first-grade comb honey is; for as extracted honey it really *is* first grade. I usually select the supplies for personal use from this grade, though never if the comb is broken enough to allow the honey to escape. Then it is only fit for the extractor.

The lower grades are those composed of mixed honey, uncapped combs (although the latter may be fit to put into the extractor if allowed to ripen), combs in which brood had been started, etc. Their disposal depends on individual conditions and the demands of the surrounding country. Poorer people are sometimes glad to purchase this grade. Some will do for a second quality of extracted, and some I prefer to feed back to the bees.

JAKE SMITH'S LETTER.

Mr. A. I. Gleenings: deer sir:—I like them dovetail hives first rate. They go together so slick. You doant have to hold one piece careful on another, and then when the nail is druv find you didn't hold it just right; but when you drive them dovetails together they're bound to be right. And it's a great thing to have movable combs soze you can git at the innards of a hive.

First time I used that Crane smoker, Zed he said he'd blow for me. So he got up steam in good shape, so the smoke was thick enough to cut with a knife. I took off the lid of the hive, and Zed he let em have it good and strong. It was so black you could scarce see through it. Pirty soon I noticed the bees was just a pourin out the mouth of the hive.

"Hold up, Zed," says I; "you're a makin em swarm."

"You're right," says Zed. "Well, now, isn't that a new idee? Just see em come! Now we'll know how to make bees swarm after this. But isn't a smoker the thing!"

But they didn't swarm. They just spred all over the front and side of the hive, and bimeby they went back in. The way we do now, we just puff the least bit of smoke in at the mouth of the hive, then raise the lid a little bit and puff a little smoke in, then take off the lid and blow the least bit all over the top, but not down into the bees. Any time they git obstreporous they git another little touch, but we never make it look like a pillow of smoke. When I git my eyes full of smoke I feel sorry for the little bees, for Zed was a readin that a bee has 5000 eyes, so it must hurt the bee 2500 times as much as me with only 2 eyes.

With these new hives so you can lift out a sash of comb any time, it's ever so much handier than with the old scaps where you had to brimstone the bees and split up the scap before you could see what was inside. But it was a little to handy for Zed, for he kep a pullin out the combs so many times a day that the bees had no chance to work. We finally settled down to the idee that, if you want the bees to do their level best, you mussent pull out the insides of a hive only just when you hefto.

Zed he's been a tryin all sorts of things to burn in the smoker. Some he's read about, and some he hasn't. Among other things he tried weather-beaten corncobs pounded up with the butt end of an ax; pine cones, rags, paper, bark, rotton wood broke up, sound wood cut up, and reelly it seems most any thing will do. Rags or paper has to be tied up in rolls, and an old calico apron will make enuff to load a smoker a good many times. They was a dead apple-tree near by, and it was right handy to reach

up and break off a little limb and then break it all up in little pieces short enuff to go in the smoker. They aint any thing better than sound wood split up in little pieces a ¼ inch through, only it's a good deal of work. Go to the cook stove and fill your smoker an inch deep with hot coals, and then put in your wood.

Spunk wood from rotten ellum is handy to light with, and that that's soft and white from rotten apple is good too. One of the easiest things to git is planer shavins. First git some common shavins a carpenter makes at his bench. You'll light some of them and then fill up with planer shavins, and put the whole thing out. Now emty out your smoker and try it over again. Light one of the bench shavins and drop it in. Blow the smoker just a little. Drop in another bench shavin—loose—then another; and as fast as the blaze comes up through, drop in another; but be sure not to pack them down the least bit. When your smoker is full of loose bench shavins, it will begin to git emty by the shavins burnin, and you a blowin all the while, and then begin throwin in the planer shavins loose, and a blowin as you fill in; and by the time you git it full, pack it down a little and you're all right. If you pack too tight you'll put it out, but you'll learn. If you can git hardwood turnin-lathe shavins, that's better than planer shavins.

Another way maybee you'll like better. Soak a ¼ pound of saltpeter in a quart of water; soak spunk wood or any rotten wood in it and then dry it. You can light that and put it in a smoker, and then cram any kind of fewel in and it won't go out. JAKE SMITH.

ANSWERS TO SEASONABLE QUESTIONS
BY G. M. DOOLITTLE, BORODINO, N. Y.

EXTRA COMBS FOR EXTRACTED HONEY.

Question.—Heretofore I have worked my apiary for comb honey, but think of working for extracted honey the coming season; therefore I should like to know which is the cheapest and best way, all things considered, to obtain extra combs for the purpose, not having any extra combs on hand.

Answer.—Under such circumstances I think I should buy comb foundation, putting it into wired frames. I could never make a success of having combs built in upper stories, although I think that, where working for comb honey, there is greater success in allowing the bees to build their own combs, where the apiary is worked on the swarming plan. The trouble in trying to have combs built in upper stories lies in the fact that too large a proportion of the comb will be built of the drone size, hence it can not be transferred to the lower story of the hive without producing a host of useless drones as consumers of the honey gathered by the workers. Looking toward the best results, I would suggest that a few of the strongest colonies be supplied with frames of foundation, two or three weeks before the honey-harvest arrives, and fed sugar syrup, if you have no inferior honey, feeding them very liberally so they will work with a will in drawing out the foundation into combs, and thus you will have some combs to use in the upper stories, together with the frames of foundation necessary to fill out the hive. In this way the bees will not have any excuse for idleness in waiting for the foundation to be drawn out when the honey-flow is upon them. For the purpose of feeding, to have foundation drawn out, a cheap grade of sugar can be used; and if you have any inferior honey it can be profitably disposed of in this way. Now allow a word by way of suggestion: If you have never worked for extracted honey, would it not be well to devote only half of your apiary to that purpose, working the rest for comb honey the same as formerly? Because you have made a success in raising comb honey, it does not certainly prove that you will be equally successful with extracted honey, although the prospects may point that way. And should you be suc-

cessful, there is a possibility that you may not like this part of bee-keeping as well as the other, therefore it might be the part of discretion to go a little slow until we are sure that the new enterprise will be just the thing we desire.

WINTER PASSAGES IN COMBS.

Question.—I have noticed that, when I transfer bees and combs from box hives, some of the combs have nice round holes in them about half an inch in diameter. Do bees make their winter-passages in the combs thus?

Answer.—I do not think that bees ever leave holes through their combs with a view to using them for winter-passages. I have transferred many colonies of bees from box hives, but have never seen any uniformity of comb-building. I have seen the little round holes mentioned, but I have noticed that they are as likely to be found in one part of the hive as in another. This shows that these holes are caused, as a rule, by one of two things, the first of which is the larva of the wax-moth. These are often found at the base of the cells, where they often so web the young bees together that they can not emerge from the cells, in which case the mature bees are obliged to cut the comb away in order to remove these bees fastened together, webs and all, from the hive. In doing this these holes are made, after which they are left as they are till a yield of honey comes of sufficient amount to cause the bees to secrete wax, when, as a rule, these holes are built full of comb again. The next reason I should attribute to the "cross-sticks" which are nearly always used in box hives. Passageways are nearly always left around these sticks, to a greater or less extent, and these were thonght, in days gone by, to be of great advantage along the line of the safe wintering of the colony, as the cluster of bees could contract during extremely cold weather through these without the bees being necessitated to go around the combs or becoming chilled where but a few hundred were in the spaces of comb at the outside. This led to the cutting of holes through the combs in frame hives every fall, to be filled up again the next season, or filling these holes with painted shavings so the bees would allow them to remain open. As these holes in the combs proved to be a nuisance in more ways than one, the Hill device was brought out, which is a series of curved sticks held together with a piece of hoop iron in such shape that the bees can pass under these sticks and over the top-bars of the frame, this answering every purpose of holes through the combs, in allowing the bees to pass from one space between the combs to another without becoming chilled and dying on the frozen honey.

MIXED RACES OF BEES BRINGS BEE-DIARRHEA.

Question.—Don't you think that the mixing of the different races of bees has brought what is known as "bee-diarrhea" into the country? Years ago, when we had only German bees, bee-diarrhea was unknown.

Answer.—I think the questioner is mistaken in his assertion that bee-diarrhea was unknown when there were only German bees in this country, for Quinby tells us all about the prevalence of this disease several years before the Italian bee was introduced, and the Italians came many years before the Cyprians, Syrians, Carniolans, etc. No, this trouble did not come to us through the importation of the different varieties of bees; and if it was not as prevalent years ago as now, which I think was the case, it was because the country was more protected from the fierce winds we now have, by the abundant forests then in existence, but now cut down to give place to the "onward movement of man." When father kept bees, some thirty to forty years ago, the woods came close around our dwelling, and the bees could fly every time the sun broke through the clouds, when the mercury reached 45° or above. But now every thing is different; for, four times out of five, when the temperature reaches the degree given above, during the three winter months, the wind blows so hard that no flight is accomplished, unless it is done at a great loss of numbers; hence the bees have to suffer on, or die, as the case may be. From careful watching for the past twenty years I am confident that the trouble known as diarrhea in bees is caused by confinement beyond endurance of the bees. The trouble is wholly incident to a continuation of weather unsuited for the flight of the bees, and is more of a mechanical nature than of a disease. Many things may conspire to shorten or lengthen the struggle for existence, such as bad food, great dampness, weak constitution, etc. Any of these may make the struggle short, and the reverse of these may vary all the way from successful wintering to a long tedious hanging-on to life that ends in spring-dwindling with barely a building-up, to try the same thing over again the next winter. With no return of balmy weather, no flash of the wing in the sunshine, and no chance of voiding the fæces outside of the hive, the end must come sooner or later, and for these reasons I can not see how the word "disease" fully covers our wintering troubles.

CIRCUMVENTING ANTS.

I see that some of your subscribers are troubled with ants. I was traveling a good many years ago, and late one evening sought the hospitality of an old farmer living in the country, fifty miles from the railroad. His family were very primitive people, and, though in good cir-

cumstances, lived very simply. As we went to supper I noticed a small wad of lint cotton tied around each of the legs of their safe. I was inquisitive enough to ask what was the purpose of that, and was told that it was done to keep the ants out of the safe. I thus learned that ants can not or will not travel over loose lint cotton.

KEEPING OFF CHICKEN-LICE.

From an old African slave, who used to belong to a very intelligent planter, I learned that poultry can be kept free from vermin by the very simple device of providing sassafras poles for perches. I have tried this scheme for two years; and, while my neighbors' chickens and premises have been overrun with chicken-mites, mine have been entirely free from this pest. I suppose that the strong aromatic odor of the sassafras is disagreeable to the insects.

Columbia, Miss., Dec. 13. Novice.

THE FLANSBURGH SCRAPING-TABLE, AGAIN.

The specific use of the box G, on page 921, Dec. 15th number, on legs, is to hold the scrapings, and also to hold the shelf A, on which to set the screen bridge B, to scrape sections on. The bridge is a separate fixture, and the shelf is a solid board with no hole, as your artist shows. I have a hole cut through mine, however, at my right, near the end, to set a glue-pot over, and a lamp underneath, to keep the glue warm when glassing sections of honey for the New York market.

You inquire in your footnote to my article whether the fine particles do not leak through the screen on the lap. No, not on the lap. The fine particles, and the coarse ones too, for that matter, go through the screens on the shelf; and when the scrapings accumu ate too much I lift it up and brush them off into the box C. The shelf should have *no square* cut through it and the screen laid over it, as the artist has made it appear in the engraving, else, of course, the particles would go through on the lap. G. J. Flansburgh.

So. Bethlehem, N. Y., Jan. 10.

CARP—PROSPECTS UP TO DATE.

We have had a great haul of carp this week—or, rather, on Christmas day and night—when, on two fishing-grounds, there was taken five tons of fish—mostly carp. It is only a few years since Don Howells, then Fish Commissioner for the State, stocked the Maumee with carp, and this is the result. The greed of the great fish-houses has nearly destroyed our pickerel, sturgeon, white fish, by blocking up the mouth of the river and preventing the fish from getting on their spawning-grounds. The result is that now, after having destroyed up-river fishing, they have no fishing in the bay for themselves. The carp, which is so poor a fish that Howells did not want any in his dish, is all there is left to take the place of our pickerel; and the reason they survive is because they are essentially a grazing fish, and love to burrow in the mud, grass of the river, and so are *always at* home, and do not have to run the gauntlet of the pound fisherman's nets. The fish caught on Christmas were fat, and ready to breed. One large one, of which I had a taste, had about three pounds of roe in her. The fish at this season of the year are very good eating, and it seems to be the only fish that is likely to escape the destructive pound fisherman, and give us up the river a taste occasionally of fresh fish.

Perrysburg, O., Dec 30. G. A. Adams.

ST. JOSEPH, AGAIN.

Just as I expected, Dr. Miller. Did you ever know any thing or anybody who was so perfect that some chronic pessimist would not be airing the bad if you ventured to speak of any good qualities? You probably remember that they called Jesus a "glutton and a winebibber;" but notwithstanding this, some saw in that same Jesus the highest exemplification of perfect manhood the world has ever known.

It is reported of Carlyle, that, while listening to the praise which an American was bestowing on the river Rhine, he remarked, "Yes; but it is full of dead dogs!" The American, who was a jovial and happy genius, replied, "Yes; and you can see nothing *but* the dead dogs."

That is the way with some people, and I presume they are more deserving of pity than blame. However, if you have read the *American Bee Journal* carefully you know that I long since condemned gambling on the fair-grounds, and I further stated that my name would not again appear in connection with the fair while this gambling was permitted.

To be frank with you, it was a matter of curiosity to me to know where this institution of gambling secured all its patronage. I felt sure that the *good* people of this city would not countenance any thing of the kind. It is all clear to me now. The patrons came down from Iowa, where they run race-tracks the year round, and build up towns around them. Perhaps our Iowa friend was a little ashamed of this, and this accounts for his name being kept in the background. Where did that dramatic pessimist get all of his information, any way?

Now, Dr. M., do you think it just the thing to rush into print with such a sweeping charge against the morals of this fair city without even making an effort to learn whether or not the statements were overdrawn? However, we can stand it, as our shoulders are broad; but I am greatly concerned lest the fellow up in Iowa, with no name, who can see only the "dead dogs" should feel so bad about it. But you and the readers of Gleanings should not lose sight of the fact that the great World's Fair had its "Midway" with its reputed half-nude women and other vices and immoralities, but it was none the less an illustration of the grandest

achievements of humanity. No one, however, who visited the fair was forced to patronize the fakes of the Midway unless he had a taste for that kind of amusement (?) and therefore could not stay away. The present fair-board are not all of St. Joseph; and our good Iowa friend with his overshocked morals can come to this city and not see any of the races or gambling, unless he has a morbid desire to witness that kind of thing. However, "Let him that is without sin cast the first stone."

EMERSON T. ABBOTT.

St. Joseph, Mo., Jan. 14.

HIVING BEES ON SUNDAY.

Is it right to hive bees on Sunday? Or is it *necessarily* a work of mercy or charity to hive bees on Sunday? Couldn't bee-entrance guards be used? Wouldn't it be more in keeping with the fourth commandment to divide a swarm of bees on Saturday than to ask our man-servant or our maid-servant, our son or our daughter, to remain at home from church to watch the bees lest they swarm in our absence?

Tunnelton, W. Va., Jan. 11. W. E. DEAN.

[My good friend, of course you will recognize that there are probably extremes on both sides in regard to this matter. I have heard of people who let a large swarm of bees, that came out early in the season, go to the woods and be lost, because the bees happened to come out on Sunday. I have known a good many more, however, who did not really like to go to meeting any way, and who thought the excuse that the bees might swarm in their absence a very good reason for staying at home from church during the greater part of the swarming season. If we are honest and conscientious in striving to do that which is right in God's sight, and call in a little plain common sense to direct us, I do not think we shall go very far out of the way. Dividing in order to prevent swarming is a partial remedy; but when bees get a swarming mania it seems to be of but little avail. Ernest tells me that he considers bee-entrance guards of very great benefit—that is, they will prevent swarms from going off to the woods, temporarily at least. Where there is a considerable number of bees, and they have been swarming pretty freely, say on Friday or Saturday, I should think it prudent or right for some member of the family to remain to look after the bees; and I would advise changing around so that no member of the family may be entirely absent from religious services. Or if one can not go in the day time, let him go in the evening; or let one go to the Sunday-school and another to church.] A. I. R.

REPORT WITH A MORAL.

I commenced the season of 1893 with 180 hives, mostly in fair condition, and my returns were 32,600 lbs. of extracted honey, and 300 lbs. nice yellow wax. I lost 50 colonies by robbing; I had an inexperienced man, who did not know when they were robbing. J. L. GREGG.

Tempe, Arizona, Jan. 15.

LATE MATING OF QUEENS.

Our own experience is very similar to that of Mr. Replogle, as given on page 9, and we are *very* sure that the thing set forth by Guenther is correct. We have handled bees over 50 years.

Syracuse, Kan., Jan. 5. JAMES H. WING.

TWO NUCLEI IN THE SAME DOVETAILED HIVE, AND WITH THE SAME ENTRANCE.

I have been using, last season, the eight-frame Dovetailed hive for two nuclei in rearing queens, as mentioned on page 807 of GLEANINGS, but with the entrance to each in the same end of the hive; and out of ten or twelve so arranged I lost only one queen. F. M. TROUT.

Crete, Neb.

Reports Encouraging and Discouraging, if all were published that come in, would take too much room. As we like to know what others have done, we have decided to put in all the reports in this style, that come. S, in the first column in the table, stands for "Spring Count;" F for "Fall Count;" E for "Extracted Honey," and C for "Comb Honey." The rest will be plain.

	Col's	Honey	Price.	Season.
Joel Hiser	S. 20	E. ——	—	Poor.
Deweese, Neb	F. 40	C. 500	—	
E Stahl	S. 150	E. 16500	—	Good.
Kenner La	F. 350		—	
W. G. Snodgrass	S. 50		—	Very bad.
Montrose, Mo	F. 53		—	
Henry L. Wurl	S. —	E. 132	—	
Mayville, Wis	F. 7		—	
Francis Ortt	S. 31	E. 2500	—	Good.
Darling Road, O N. T	F. 52	C. 300	—	
D. N. Cummer	S. 27	E. 2630	—	Good.
Florence, Ont	F. 54	C. 8	—	
Robert Douglas	S. 9	E. 389	16—18	
Greenlaw, England	F. —	C. 449	20—24	
J. E Schreckengost	S. 4		—	Good.
Kittaning, Pa	F. 16	C. 500	20—25	
J. W. Wilson	S 36		—	
Ro-lin, Ontario	F. 50	C. 4500	—	

W. W. C., of D. C., asks whether, in warm spells of winter weather, bees will rear brood. *Ans.*—Yes, almost invariably—especially toward spring.

C. B., of Tex., would like to know how many pounds of starter foundation it requires to make 1000 lbs. of section honey. *Ans.*—We figure, on the full sheets, 4¼ sections, about 10 pounds; for smaller sheets, proportionally less.

J. P., of Ia., asks, "If ¼ as a bee-space between super and frame is right, why not between top-bars and frames above?" *Ans.*—There ought to be the same bee-space in both cases; but practically there is a slight difference in the Dovetailed hives as we now make

them. We are not able at present to equalize the spaces exactly, without running into a snag still more objectionable.

S. S., of Wis., asks, "If the weather is warm enough for the bees to fly during winter, would you take the packing from the top of the frames and give them all a chance for a cleansing flight, or let them alone?" *Ans.*—Let them alone, by all means. If you are sure the bees have stores the previous fall, do not tinker with them till next spring.

C. & C., of N. C., writes that they left their supplies on the hives during winter because they feared that, if they took off the supers, the bees would not have enough to winter on. They ask if they should be removed next spring. *Ans.*—Yes; otherwise the bees will soil the sections; and, besides, the brood-nest should be reduced to the smallest capacity during the brooding season, so as to conserve the warmth.

J. P. B. wants to know, 1, whether a hive 21 x 13 x 11 is too large to secure good results; 2, To obtain a big supply of bees early, should they be stimulated by feeding? 3, Do bees gather any stores from corn-blossoms? *Ans.*—1. No; but it is usually best to have the dimensions standard, so as to correspond with regular goods. 2. Yes, it is desirable to feed the bees a little every day, if they require it in the spring, or when the weather is settled enough so that they can fly almost every day. Feeding too early to stimulate is bad. 3. This is a disputed question. They do gather pollen from corn-blossoms, but it is doubtful whether they get any honey generally from them.

R. F. R., of Va., asks, 1, Is it a good time to introduce to or change the queen of a colony when the bees swarm? 2. When both honey and increase are wanted, is it a good plan, after swarming, to divide the old colony into nuclei? 3. He would like to have us give a good plan to manage seven hives in spring for comb honey. *Ans.*—1. Yes. 2. Yes, if you are willing to spend a little money in feeding up your nuclei, you may divide to advantage; but if honey is your object, and you wish to proceed as economically as possible, we would advise you to let nature take its own course. 3. It would take too much space to give even an outline in this department, and we shall have to refer you to the text-books.

W. T. H. wants to know, 1, whether our foundation-machines will make both brood and surplus foundation; 2, If bees are put in the cellar, a few yards from their old stands, and then allowed a flight occasionally during warm days, will they go back to their old stands? *Ans.*—1. Our standard 10-inch mill is made so as to make both brood and surplus foundation, a change from light to heavy being made by adjusting the screws, about as you squeeze wringer-rolls down to dry the clothes out more. 2. When bees are put in the cellar they should be kept there, and not allowed a flight until they are set out permanently next spring. Experience has shown that it is bad policy to move bees in and out of the cellar every warm day.

F. L. S., of Minn., wants to know what is the net profit per hive of bees in California. *Ans.*—We can make only a very poor guess. In a fair season a fair colony under good management, in a fair locality, ought to yield 75 or 100 lbs. of extracted honey, and 50 or 75 of comb, although these are conservative figures. Extracted in large lots will net the bee-keeper from 4 to 5 cts., or $3.50 per colony. The comb would net him about 10 or 12 cts., or $5.00 per colony. From this must be subtracted the cost of managing the bees, cost of foundation, cost of cartage to the nearest railroad station or market, cost of square cans for the extracted honey, or shipping-cases for the comb honey—cost of sections, interest on the money, losses from absconding swarms, etc. This answer, at best, is unsatisfactory, and we therefore call upon Rambler to help us out.

F. M. McC., of Ark., desires to move 80 colonies in Dovetailed hives to Southern Ohio. *Ans.*—We would fasten the bottom-boards and close up the entrances. We would then, in place of the covers, tack on rims, made out of ⅞ stuff, of the same width and length as the hive, outside measure, and 2 inches deep. These rims should be covered with wire cloth or cheese-capping. If you are going to move your household effects also to Ohio, you had better put the hives in one end of the car, and your goods in the other end; it will be safer for you to accompany the car, as the jostling and bumping will disarrange the hives. To partially remove the jar, it is a good plan to strew the bottom of the car, where the hives are to be placed, with four or five inches of straw. We omitted to say any thing about fastening the frames, for we assume that your bees are on the Hoffman frames, which require no fastening. If not, we would use the spacing-sticks illustrated in our catalogue.

E. J. C., of O., asks how many bees it will take to gather a pound of honey per day. *Ans.*—It all depends upon the source from which honey is coming—that is, the amount of flow. From basswood, yielding at its best, a single colony will gather from 3 to 30 lbs. of nectar per day—probably 3 to 7 would be a fair average. A good fair working colony—that is, the bees themselves—weighs from 5 to 8 lbs.; and as we know from careful experiment that there are about 4500 bees in a pound, there will be anywhere from 20,000 to 40,000 bees. This number should be reduced anywhere from a third to a half, so as to include only the working force, or that force that brings in the honey. We may assume, then, that it takes, on this basis, anywhere from 15,000 to 25,000 field-bees to gather 3 to 5 lbs. of nectar from basswood; or,

to get right down to your question, 5000 bees all day will gather a pound of nectar, and that "all day" may mean 12 or 14 hours. From clover the bees will be able to gather less than half as much per day. Mr. E. E. Hasty figures that from 3500 to 7000 bees can carry a single pound of nectar. Averaging the number at 5000 it would seem that either there is a less number of working bees or else they make only a few trips to the fields. During basswood, bees are generally loaded down.

Now, who will tell us how many loads an average bee, under an average flow of basswood, will carry in a single day of 12 or 14 hours, and who will straighten out our figures?

THE CORRECT DISTANCE TO SPACE FRAMES.

A RATHER STARTLING STATEMENT.

By Major Shallard.

There is a great diversity of opinion among all sections of bee-keepers about this most important point. Each party seems to follow some "rule of thumb," or else blindly follows the lead of some other person. In America—that home of progressive bee-keeping—we find the bee-keepers spacing all the way from 1⅛ inches to 1½ inches from center to center. The frames used to be cut ⅞ of an inch wide, but now they range from that to 1¼, and from ⅜ to a full inch thick. With the old ⅞ frames spaced 1½ inches from center to center, the distance actually between the frames was ⅝ of an inch. The trouble then was, that the bees would build these together with brace-combs. To get over the brace-comb trouble, the Americans tried inch-thick top-bars; and some, wishing to "go one better," made them also a full inch wide. They claim that the deep wide top-bar does away with burr-combs. I dispute this point. I have had these frames in use for the last seven years, and have thoroughly tested them, with the result that, in my opinion, the amount of space between the bars, and not the thickness of them, controls burr-combs.

Perhaps I can explain my position better from another point of view. The depth of a brood-cell is $\frac{7}{16}$ of an inch. Two of these, back to back, make a comb ⅞ of an inch thick. If the cells are any thing over this depth, the queen can not deposit eggs in them. The width of the frame, and the distance they are spaced apart, govern the depth of the cells; therefore if you use a wide frame in the brood-nest, either the queen can not use the cells, or —what really does happen—the bees keep the level of the cells below the level of the frames.

To leave the subject of wide frames, and come to the matter of spacing the ⅞: If these are spaced 1⅛ from center to center, the comb will be kept just level with the frames. If the distance between the frames exceeds this, the cells near the top-bar will be drawn out by just that distance, and filled with honey, and the space left between the surfaces of the comb—not the frame—will be found to be just a little more than ¼ inch. Does not this prove that, according to the bees' ideas, that space is sufficient? The space which contains brood below these elongated cells will, of course, be greater; but as the season goes on, and the queen goes off laying, the honey-cells will be extended. Here comes in the objection to wide spacing. The brood-nest of the hive should be kept for the brood only. The honey should go into the top story. By wide spacing, a large percentage of the honey is deposited in the brood-nest, and it is always a growing amount. The bees get the habit of depositing there, and by degrees crowd the queen, so that she has not sufficient room for egg-laying, and they get disinclined to enter the top story at all. I have thoroughly tested this matter. I do not speak from theory, as I have all my frames spaced 1⅛ from center to center. The combs are built on full sheets of foundation, on wired frames. They are exactly the thickness of the frames, and I do not think any one can show a finer lot.

I find here that I have missed a point which I wished to ventilate. The bees always build brace-combs if the space is more than a full quarter of an inch; and by careful experimenting I have proved that, at that width, they build least; in fact, they build scarcely any at all. My section-crates have a slatted bottom, and I do not use a queen-excluder for sections of any sort. If I keep the bottom of the crate a full quarter of an inch from the top of the frames, I get scarcely any burr-combs, and can lift the crate off clean. If the space exceeds that mentioned, the burr-combs are built freely, and I have a sticky mess when the crate is taken off. If, on the contrary, the space is less, the crate is stuck down with propolis.

I have experimented largely in this matter, and am fully satisfied that a full ¼ inch is the proper bee-space, and that spacing and not thick or wide top-bars is the secret of burr-combs.

Glenbrook, N. S. W., Dec. 1.

[With us, the wide and thick bars do prevent, almost entirely, burr-combs but not in all cases *brace*-combs—those spurs of wax between the bars—and this is confirmed by scores of bee-keepers. Possibly your long seasons, warmer climate, and locality, cause the difference in results. About that spacing: If there are any bee-keepers who make a practice of spacing all their combs to 1⅛ inch from center to center, we were not aware of it. The majority space

1⅜, a few 1¼, and the rest 1½ inch. You have suggested a rather new idea to us on the 1⅜-in. spacing. If that distance will make the old ⅞x⅜ top-bars proof against brace and burr combs, it will effect quite a saving in the cost of frames. We must confess, however, that we are skeptical; but as the idea comes from a large and practical bee-keeper—one who, we believe, has nearly a thousand colonies—we should give it a careful and unprejudiced trial. In the mean time, our American bee-keepers have said that 1¼-inch spacing was too close. What will they say of 1⅜ spacing? Who is there among our readers who can affirm or disprove Major Shallard's point?—ED.]

O Lord, what shall I say when Israel turneth their backs before their enemies?—Josh. 7: 8.

EIGHT extra pages this time, and, for aught we know, for several issues to come.

OUR colonies under telescope covers keep much drier and nicer than those under other sorts of covers.

WE have had so much printing to do lately that we have been running night and day, and are now nearly caught up.

OUR symposium on the subject of bees and fruit will be continued in our next issue. It is hardly time to hear from our correspondents so as to get their articles here in time for this present number.

WE learn with *pleasure* that Bro. York is *also* having a flood of renewals for the *American Bee Journal*. This indicates that bee-keepers are not yet discouraged, and that they have hope for the future.

THOSE new sections, sanded and polished on both sides, are taking like hot cakes. This year's business is starting out unusually brisk. In fact, we have been obliged to add more help, new machines, new blower, more line shafting, etc.

WE call special attention to Major Shallard's statement, in Trade Notes, viz., that top-bars ⅜ thick and ⅞ wide, spaced 1⅜ from center to center, will prevent burr-combs more satisfactorily than any other arrangement. We ask, Is this true? and is 1⅜ spacing practicable and possible in this country, for all conditions and times in the apiary?

WE have sent and got Dr. Mason's Given foundation-press, and are experimenting with it with the view of putting them on the market at some future date. By the way, can any of our readers tell us whether the widow of D. S. Given is still living? We do not wish to take advantage of a good thing without making some satisfactory arrangement with the parties who first brought it to light.

OUR list of subscribers is not for sale at any price. Nearly every spring we are asked what we charge per 1000 names. We do not wish those who favor us with their subscriptions to be loaded down with circulars and other stuff, *ad nauseam*, without their consent. We do, however, sell lists of our catalogue names of live bee-keepers at $2.50 per 1000, printed from type.

WE hope our readers will not get the impression that, when an article does not have a footnote, it does not receive our editorial indorsement. On the contrary, such an article is frequently so complete in itself that there is nothing we can add to it by attaching a footnote. We have several very valuable communications in this issue that have no footnotes whatever, and yet we consider them just exactly as good as those that have our comment attached to the end.

A CORRESPONDENT has sent us some pressed specimens of yellow-jasmine flowers and leaves, a poisonous honey-plant. The flowers are bell-shaped, light orange-yellow in color, one inch long, and about ½ inch wide at the widest part of the bell. The leaves are lanceolate, or lance-shaped, and are from ¾ to 1¼ in. long. If we could get some fresh specimens we should be glad to make an engraving, so that all of our readers in the South may be able to recognize the plant at once.

BRO. YORK, of the *American Bee Journal*, calling attention to the fact that we said that Prof. Cook had been writing more sugar-honey articles for the agricultural papers, says Prof. Cook has not written for such papers for months. That we did see articles on the subject of sugar honey, signed by Prof. Cook, we are certain; but we now think they must have been reprints of old articles not credited that friend Cook wrote a year or so ago for the apicultural journals. We have mislaid the papers so that we can not now refer again to them. You see, when a thing once gets started it is hard to stop it. We accept the correction with thanks, and hereby tender our apology to Prof. Cook.

WE are getting quite a number of inquiries asking whether we will not take queens in payment for advertising, or articles for GLEANINGS in payment for supplies. We have arranged for all the queens that we can possibly use for another season; and in justice to our customers we furnish queens only from breeders who we *know* can produce just as good queens as we do,

or even better. Other breeders may do just as well; but we must have the positive knowledge before we undertake to receive queens on such a proposition. As for contributed articles, we never make any promises. Manuscripts may be sent, and if meritorious they will be received at whatever they are worth to us.

A SHORT time ago a correspondent in the South hinted that we were putting in the big reports regarding the honey-yields of Florida, but not the other kind. We were not aware that we had made any such discrimination. If any locality is not accurately represented, kindly correct it, sending a short pithy article; but do not accuse us of dishonesty, nor call the other fellow a liar. You want to be sure to bear in mind that there is very often a marked difference in localities only 10 or 15 miles apart, and particularly so between different counties and between different States. Don't imagine that *your* county invariably represents the same conditions that will be found in neighboring or similar counties of your State.

WE are often asked what typewriter we would recommend. The only cheap one-handed machines that we consider worth any thing are the World, which we used to sell, and the Merritt. The last one does the nicest work of any. But there is none of these one-handed machines that will do work much if any faster than the pen. If one wants to do any considerable amount of correspondence, and yet can not afford to pay much over $25.00 or $30.00, we would advise such to write to any of the typewriter exchanges for a second-hand Remington, caligraph, Hammond, or any of the second-hand machines. You can not expect any *one*-handed machine to do work, as a general thing, faster than the pen. If one can write a good plain hand, he had better let the cheap one-handed machines alone.

HONEY FROM SWEET CLOVER.

DURING my visit at Salt Lake City I wrote up at length in regard to the beautiful honey gathered from sweet clover that thrives so luxuriantly out on the sandy alkali plains, where no other plant could flourish on account of alkali. This honey is not only equal to any other produced in the world, but it is about the whitest and finest-looking honey in the world. The only respect in which it is inferior to the white-sage honey of California is, that the sweet-clover honey candies readily on the approach of cold weather, but the sage honey does not; and when candied it is, perhaps, the whitest candied honey gathered from any known source. Well, just now I am greatly pained to find that some of the food commissioners think, without analyzing, this honey of Salt Lake City is sugared, probably because of its extra fine appearance. In fact, some specimens of candied honey are almost as white as snow, or as white as white sugar. One who is at all conversant with the plant—sweet clover—will have no difficulty at all in recognizing sweet-clover honey. It has a faint or very delicate flavor, reminding one of the smell of sweet clover while in bloom. If you bruise the foliage of the sweet clover when the plant is growing rank in the spring, you will also get a strong perfume, quite like the delicate flavor of the honey. Sweet-clover honey ought to be as readily identified as basswood and clover; and it is a burning shame that the friends who are producing and marketing this beautiful product should be persecuted by having some stupid official pronounce it or even suggest, that it is not pure honey. A. I. R.

THAT STATISTICAL SCHEME FALLS THROUGH.

YOU will remember we proposed a scheme for ascertaining the amount of comb honey produced in the United States, from the average number of sections sold during any average year. Well, the scheme went along swimmingly until one of the manufacturers declined to give his output, for reasons which he considered good and sufficient. In addition to this we have been receiving lately letters that read something like the following, which we produce as a sample:

> I see you are going to set Dr. Miller at guessing how much comb honey there is produced in this country. Here is something for him to try his hand at; and if he can guess it he must be a genuine Yankee. Two years ago I bought of you, through A. F. Cate, of Fallbrook, 40,000 sections. The season following I got about 50 lbs. of comb honey. Last season I got some more. I now have over 30,000 of those sections on hand, and empty. How much section honey did I get last year? And I am anxious to know how much I shall get in 1894.
>
> Wildomar, Cal. I. S. CROWFOOT.

In the first place, we can not get at the annual output of sections unless all of the manufacturers give their annual output; in the second place, even if we could obtain the full number of sections made, circumstances something like those pointed out above might make the result but little better than a good guess.

EFFECT OF DRY CLIMATES ON QUEEN-CAGE CANDY; SHALL WE RETURN TO THE WATER-BOTTLE?

IN the *American Bee Journal* for Jan. 18 is a valuable article from W. A. Pryal, on mailing queens long distances. He writes of the difficulties in making a candy just right so that it will remain just right, or uniformly soft, in the various climates to which the queen-cage is subjected while in the mails. He refers to the very dry atmosphere of California and its bad effects on the candy, and suggests that, as the food can not always be made to meet the varying conditions, we return to the water-bottle. He says:

> I have never yet received a queen dead, that was shipped in a cage that had a reservoir for water. No matter how hard the candy may have become

through heat or otherwise, the bees would manage to eat all they required of it, if they had water handy. Queens that were confined in a cage that contained a supply of water seemed to be healthier than those queens that are provisioned with a hard candy.

We suspect there is considerable truth in this; and as queen breeders and shippers we have concluded to give the matter another trial during the coming summer. Years ago, when we used exclusively the hard candy, we considered the water-bottle a necessity; but when the Good candy was introduced, the bottle was dropped, principally because it was not always possible to adjust the small piece of candle-wicking in the cork of the bottle in such a way that it would not feed the water too fast, and thus either wet the candy up too much or run out entirely, and leave the bees with dry candy and *no* water. We made a few experiments last summer, but somehow the water leaked out in some of the cages, even before they left our own hands. The queens had to be transferred to other cages, and were then sent on the usual soft candy, without any water; but they died all the same, for they went clear to Australia. We suggest that the Atchleys commence experiments, not only for their own personal advantage, but for the benefit of the brotherhood of queen-breeders and their customers. Perhaps there is nothing more annoying than to have a hive just ready to receive a queen, and then, when her majesty arrives, the queen is found to have "gone dead." Some seasons our percentage of losses in sending queens long distances is practically nothing; and then, again, the peculiar conditions of climate, as Mr. Pryal points out, make a lot of trouble.

THOSE FOOTNOTES—THOSE EVERLASTING FOOTNOTES.

In the great flood of renewals that have been coming in during the last few days, it seems as if almost every one says, "Keep those footnotes going;" or, "Do not stop those footnotes if you want us to renew;" or, "I skip the articles and read the footnotes;" and, again, a writer whose letter is in our hands, says, "Do not, under any consideration, think of stopping them. Sometimes the footnote has more pith and life to it than the article." In relation to the last quotation we wish to say right here that it is not our purpose to absorb in the footnote all the meat or juice from the article. We simply intend to give it flavor.

Some of our older readers will remember we asked, years ago, as to the desirability of the comments, and the result was the same as above; but since the footnote mantle had fallen upon younger shoulders we had a curiosity to know whether they were still desirable, and if not we expected to drop them. We are satisfied, and shall keep them a going.

Now, dear reader, it is not fulsome praise that we seek—no, no, no—but the best good of you all. If any one department should be lopped off and another added to the journal, please let us have your commands. "Not to be ministered unto, but to minister;" and, again, "The greatest good to the greatest number," are mottoes that we try to keep before us.

Perhaps it will be well to add, that the changes made commencing with the issue for Jan. 1 have been most heartily indorsed by prominent bee-keepers and other lesser lights. If we are sure of any thing, we know our readers are particular about having only the very best communications submitted to their perusal; on the principle of the survival of the fittest we may say that we have room for only about half the manuscripts that come to us.

Perhaps we can illustrate how we sift. A. I. R. does not pretend nowadays to look over the bee-journal exchanges, and quite a number of other exchanges that he used to read with pleasure. We run through them just as he formerly did. When we come to an extra good article we take out our blue pencil and mark around it; and the pith itself we underscore by putting a blue line under each line of type. These exchanges are put on his desk, and at his leisure he simply looks for the blue marks.

Now, then, we go over the manuscripts in much the same way. A large part of those we use, we cut off at both ends; and if an article is not trimmed down at all, except a few from our regular contributors, it is an exception. After sifting over a great pile of manuscript, we give you, as nearly as we can, in the language of another, the "cream," and the cream is put all together in as compact a space and as readable type as possible. In other words, we try to give you the benefit of our "blue marks."

MR. HEDDON, AND HIS TEACHINGS ON ADULTERATION.

Mr. Heddon is reported, in the last *Bee-keepers' Review*, as saying, in a paper which was read at the Michican State Convention, that the hue and cry now being made against adulteration was doing far more damage than the actual adulteration itself, because the adulterators are not so foolish as to put on the market an unpalatable compound.* He denounced, also, the change in the constitution of the Bee-keepers' Union, whereby the Union is enabled to prosecute adulterators, and further declared that, in the present state of the art of chemistry, analyzation was not sufficient to prove adulteration, and therefore argues that, if we can not *prevent* adulteration, the best thing to do is to keep still and let the evil go on.

This is about the same line of argument he presented a year ago at the same convention; and after the opposition that was raised at the time, the reiteration of such teaching makes us

*Yes; but they *are* foolish enough, as facts prove. Bad men always do foolish things.—Ed.

wonder what he expects to accomplish. Does he not know that this, coming from a representative *bee-keeper*, will give comfort to glucose-mixers? This idea in one way seems plausible, and we are sorry to see that one or two good men agree with him.

Saloon-keepers do not like temperance agitation, because they fear it will damage their business—if not immediately, at some future time. Honey-adulterators would like nothing better than to feel that their fabrications could not be detected from the genuine; and when we talk about ways and means by which they can be found out, they don't like it. *Apathy*, and a *sense of our helplessness*, is just what these evil-doers most desire.

There *is* a way to fight this evil of adulteration, and we can stem the tide of it, even if we *can't* put it down all at once. If we can not prosecute, we can give the names of the adulterators such wide publicity that the sale of their mixed goods will stop. See page 62. We affirm that the art of chemistry has now reached that state whereby satisfactory analysis for glucose can be made. We have only to point to the tests which Prof. Cook made upon three of the best chemists of the United States, with the result that they successfully detected every glucosed sample; and we pointed out on p. 63 of our last issue the simple alcoholic test; and the test by tasting is pretty reliable.

We happen to know that there is a considerable amount of adulteration, and it is being fostered by just such sentiments as Mr. Heddon gives expression to. This glucose-mixing is becoming more and more common under the apathy and sense of helplessness on the part of the bee-keepers, and the pure product of their honest toil has to compete with stuff so cheap that good honey has but little show, and so vile in quality that consumers say if that is honey they will never buy another drop.

Now we leave the question with our readers. If they want us to stop this "hue and cry" against glucose, drop us a line to that effect. We are quite willing to refer this question to the mass of our intelligent readers.

THE PROFESSOR'S ECONOMICAL SECRETS.

THE above is the title of a little book of 104 pages—small pages at that. It purports to be "valuable secrets in regard to new methods of farming." We quote from the circular:

By request of hundreds of farmers, from all over this country and Canada, the Professor's Secrets are now published, and ready for distribution.

The price has been reduced from $5.00 to $3.00 per copy.

As a book it is very small, not filling a large pocket.

As secrets—entirely "New Methods" in the education it gives—it is the biggest instructor ever printed—"a little wonder," filling the largest barns, granaries, and cellars, and that fills the purse, and the purse fills the pocket.

It raises much bigger crops than the old way, and does it with much less labor; kills the vermin and weeds in advance (as the housekeeper kills the bedbugs, the lice, and fleas in advance); guards against drouths and wet seasons in advance; instructs how to destroy Canada thistles (at little or no cost); how to clear land of brush and thorns, without any cost at all; how to raise 400 to 600 bushels of potatoes per acre without hoeing or weeding; how to raise 1000 bushels of onions per acre; how to raise 200 to 400 bushels of strawberries per acre; how to sow winter wheat so that it will not winter-kill, nor turn into chess, and produce a full crop.

Since I have given all the above free advertising, our friend should not complain. I may say, briefly, the plan of banishing the weeds is to plow shallow, and cultivate repeatedly, as soon as the crop is off, until all the seeds germinate; then plow quite deeply and turn them under just before frost. The same process is to get rid of insects and vermin. Canada thistles, brambles, etc., are disposed of by scattering corn, etc., and getting hogs to root them up. The method of draining your land without using tile is by surface drainage. Go on your ground after a rain, and draw the water off wherever you find it standing. Now, most of these things are good; but they are all more or less in general use, and none of them come anywhere near accomplishing the things claimed for them.

The new method of sowing and planting is to have every thing in straight rows, and do your cultivating by horse power. Effect of drouth is obviated by constant stirring of the surface of the soil. But what agricultural journals are there in the world that have not been advocating these methods year in and year out? The new method of making hay is to cut it toward night. If it rains during the night or next morning, the rain will be on grass and not on hay. I hardly need say that this is neither new, nor is it exactly true. The Professor says rain does not hurt grass when standing or cut. Some farmers may agree with him, but I think not very many. The new method of sowing winter wheat so it will not turn to chess (?) is simply by having so many furrows to carry off the water that the wheat can not be injured by so much wet, in connection with the cold weather in the spring, as to cause it to turn to chess.

The whole book is but little better than a humbug and swindle—that is, if one buys it with the expectation of getting any thing like what is claimed out of it. Furthermore, at least half of it is occupied by a very illiterate tirade against the political abuses of the day.

Besides the above "secrets," another smaller pamphlet of 20 pages, very large coarse print, is offered for $1.00. This is entitled "The Professor's Economical Secrets, or New Method of Saving the Potato Crop from Blight, Scab, and Rot." I supposed it would probably have some hint of new methods by using Bordeaux mixture or corrosive sublimate—not a word, however. Probably the author never heard of them. He commences by declaring that blight, scab, and rot, are caused by the hot sun. Potatoes grown in the shade, or in partial shade, are affected by neither; therefore the great secret for which we are to pay a dollar consists in planting potatoes in rows running east and west; but every other row is to be *corn*. The corn shades the potatoes, keeps off the hot sun, thereby preventing blight, and the roots of the corn take up the surplus moisture, thereby preventing rot. As scab is also the effect of the aforesaid heat, the row of corn is also to prevent scab.

I do not know how many of the friends have been misled or humbugged by these flaming circulars. I only know that the Professor has received $2.00 of my money. There is nothing in either of them worth copying. The older readers of GLEANINGS already know the position I have stoutly maintained for years past, that valuable information is never to be found

with those who profess to have great secrets to sell for a certain sum of money.

John Platten, Universal Farmer, Fort Howard, Wis., is the man who professes to be so abundantly able to teach agriculture to the present age. If the Agricultural Experiment Station of Wisconsin has not already tried to teach our friend that wheat never turns to chess, even during a wet season, perhaps they had better take him in hand. Although this little book costs so much money for a few small pages of matter, yet the Professor finds space in it for "swear words," and that, too, when he is undertaking to teach a class of children.

SOME NEW TRANSPLANTING MACHINERY.

Till recently we have used iron frames covered with poultry-netting, mostly, for putting out celery, cabbage, and other small plants. A year ago we substituted notched boards for plants further apart. The notched boards do the business all right, but they are rather too slow, and they do not make a hole in the ground right where the plant is to be put. The poultry-netting frame is open to the last objection; and where two or more are at work with one frame, there is confusion and delay in moving the bars the boys use to sit on while doing their work.

The arrangements figured below enable us to work faster than any thing else we have yet used. Sticks with wooden pegs on at fixed distances are largely in use in the South for transplanting tomato-plants, and we have illustrated these in the tomato book. The objection is, they make but one row of holes at a time, and

FIG. 1.

FIG. 2.

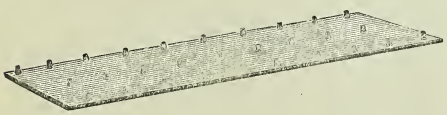
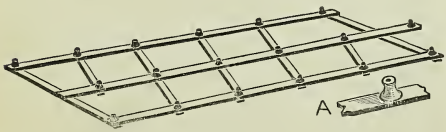


FIG. 3.



SPACING-BOARDS.

they also bother about dirt sticking to the wood. For some time I have been thinking of something made of glass or porcelain. The stopper of a vinegar-bottle (beg pardon for the illustration) answered very well, but they were expensive, and not easy to fasten in a board. Finally I found on our counters a little white glass drawer-pull. These can be put on with a screw; and by turning them upside down they make a nice imprint in the soil, and the dirt sticks to them very little. In the cuts below, at A you see one of these knobs screwed fast to a stick.

In Fig. 1 we have a board 6 inches wide and 5½ feet long. This is just right to mark out a bed covered by ordinary 6-foot sash. There are 3 rows of the knobs. They are spaced so that each one is the center of 6 others at equal distances from those around it, and they stand just 3 inches from each knob, from center to center.

Fig. 2 is a similar board for knobs just 7 inches apart from center to center; while Fig. 3 marks out the places 12 inches apart. We use Fig. 1 for transplanting radishes, cabbage, cauliflower, celery, onions, onion-sets, peppers, and tomatoes. We also use them for lettuce where it is twice transplanted.

Fig. 2 is used for transplanting all the above where they are *twice* transplanted. It is just right for Grand Rapids lettuce where it is mature—7 inches apart from center to center. It is exactly right for extra large cabbage, beets, celery, peppers, and tomatoes; also for spinach when grown under glass.

No. 3 is right for wax beans under glass; extra large cabbage-plants; celery to be banked up by putting boards between the plants while putting in the dirt; corn grown under glass; cucumbers; extra large Grand Rapids lettuce; melons; peppers under glass; potatoes ditto; spinach, for extra large; squashes; and tomatoes where you raise plants that bring a nickel apiece. It is exactly the thing for strawberries while bearing in the plant-beds, or where you force them under glass in order to get runners extra early. In fact, you can get a crop of almost any thing by putting them a foot apart from center to center, except vines that run. Of course, to do this the ground has to be very heavily fertilized. We have had considerable crops of extra early corn when put in our plant-beds exactly a foot apart from center to center. I should have said that No. 2 was designed especially for the new celery culture, where the bleaching has to be done without banking. If you do not find the knobs at your hardware store we can furnish them in quarter-gross packages at 40 cts. per package.

In using the spacing-boards there should be a boy at each side of the bed. The ground is nicely prepared by spading or forking; then the soil is sifted through a sieve such as I have described, putting the coarse portions and the coarse manure at the bottom. The fine clean soil is then leveled with a rake, then patted down evenly with the back of either boards 1 or 2. When the surface is as smooth and level as a planed board, you are ready to mark out the place for the plants. The two boys, one on each side of the bed, take hold of the board and press it into the soil the full length of the knobs; then lift it out carefully, and move it over until one of the knobs goes into the last row of holes, and then move right along, and the whole bed is very quickly spaced, and the holes made for the plants. With a bundle of plants in one hand they can be dropped and pressed in with the point of the finger faster than you would believe unless you had seen it tried. All the covering needed for most plants is to give the bed a thorough drenching with the sprinkler, or a hose with a sprinkler on its end. Settle the dirt thoroughly around the new plants. If your plants are taken up right, quite a lump of rich soil will adhere to the roots. This lump of soil will drop right into the hole made by the knobs. Not one in a thousand should fail to grow if every thing is right; and the appearance of a plant bed with the ground thoroughly covered, and no vacancies, the

plants being as thick as they can stand without crowding, is a satisfaction of itself.

If you make much use of board No. 1, look out they are moved into a new bed spaced with No. 2, just as soon as they begin to suffer from crowding; and if No. 3 is to be used at all, proceed in the same way. With these three boards you can do all your planting. We have beets now coming up over the way in the greenhouse in just beautiful shape, planted with board No. 1. We set strawberries with board No. 2, but they are too close together. In a few days we shall move them again and put them in a bed spaced with No. 3.

Now, don't you agree with me that I have worked out a very nice little arrangement for putting the plants in with mathematical precision? In fact, it is the same kind of mathematics we find in the cell of the honey-comb. Each plant is the center of a little hexagon, with plants all around it.

Perhaps I should add, that board No. 2 is a 14 in. board planed down to ¾ in. in thickness; and to prevent warping there are several ⅝ battens across the back of it at intervals. No. 1 is simply a ⅞ board. No. 3 is made of slats 1½x⅜. We prefer slats because they are lighter than the board, and a board so wide would be liable to warp.

Another thing, in setting plants a foot apart we often have to dig quite a cavity—this is the case with strawberries where we take them up with transplanting-tubes. Well, after having made this cavity it is not easy to get the plant just where the knob made the mark; but by pressing No. 3 into the bed so the slats of which it is made also make their imprint, you have a guide for placing the plant exactly where it ought to stand.

And as Moses lifted up the serpent in the wilderness, even so must the Son of man be lifted up; that whosoever believeth in him should not perish, but have eternal life.—JOHN 3:14, 15.

In the 21st chapter of Numbers there is a brief little story told us. It is told in a very few words, and with little or no comment, and yet it teaches a wonderful lesson. Let us take it up verse by verse.

And they journeyed from mount Hor by the way of the Red sea, to compass the land of Edom; and the soul of the people was much discouraged because of the way.

Let us consider that God was leading this people. In fact, they had abundant evidence of it, not only by a succession of miracles, but, if I am correct, by an ever-present miraculous manifestation—a pillar of cloud by day, and a pillar of fire by night. The people all knew that they were under God's immediate and direct guidance, and yet they became restless and impatient. There is something peculiarly touching and pathetic in that expression, "The soul of the people was much discouraged because of the way." In the margin we see the word might be translated "grieved" or "shortened." Neither did they keep their discouragement to themselves. Let us read the next verse.

And the people spake against God, and against Moses, Wherefore have ye brought us up out of Egypt to die in the wilderness? for there is no bread, neither is there any water; and our soul loatheth this light bread.

The people murmured and complained. They even "spake against God." Let us go back a little. They had formerly been slaves under Pharaoh. They were a wonderfully strong, vigorous, and athletic people, those Israelites. Pharaoh had discovered it, and he had discovered, too, that they were men of courage, and might prove troublesome if he let them get the upper hand; therefore he gave them the very hardest tasks—perhaps kept them on public improvements; and for fear they might rise up and rebel they were ground down and kept down. Very likely it would not have been possible to keep them in such subjection otherwise, for they were a rebellious and stiff-necked people, as we are told. But even while in this abject slavery they were under God's immediate care and notice. Without question, deliverance would have come *before*, had they not been rebellious and contrary toward him. They were descendants, we are to remember, of the brethren who used their younger brother Joseph in such a cowardly way. God doubtless saw fit to let them writhe and groan under the bondage of Pharaoh; but in his own good time, however, he sent them deliverance through Moses by a series of wonderful miracles; and with scarcely an effort on their own part they were delivered from the hand of Pharaoh. Surely they must have known what *liberty* meant, after their great trials. They were free, out under God's blue skies, and rejoicing in his sunshine. Nay, more than this. They were told of a promised land, even the land of Canaan. By the way, what has become of that good old hymn of our childhood—

O Canaan, bright Canaan!
I'm bound for the land of Canaan?

These people were on the way to the land of Canaan. The way was not easy, however, and they were called upon to push their way through many difficulties. Why could they not have recognized that God knew best? Why could they not, in a manly way, have pushed into and through difficulties, without murmur or complaint? Oh dear me! Why can't *we*, with this bright and beautiful world before us, push ahead with more manliness and courage, instead of grumbling and complaining against the great God who is trying to lead us? Do some of you look up and question? Why, to be *sure* he is trying to lead us, just exactly as he tried to lead the Israelites. But part of us think we know more than God does; and another part are contrary and stubborn, and would *not* be led any way if they thought God had any thing to do with it. Poor Moses! They were not permitted to see and talk with God, so they vented their spleen by continual grumblings against Moses, the God-appointed leader and law-giver. I wonder if they had learned by past experience that nothing vexed Moses more than to have them get on that old strain, and declare they would rather be back in Egypt than to put up with the hardships he called upon them to endure. They said, "Wherefore have ye brought us up out of Egypt to die in the wilderness?" This was a most flagrant and glaring untruth. Moses brought them out of Egypt, from a terrible bondage, into the most wonderful freedom, to *live*. Why, their freedom was like unto that of the United States of America. No king like Pharaoh held them at all. In fact, nothing and nobody stood between *them* and *God*. They were to obey *God's* will, and they were accountable to *him* and to no one else. They had not, however, very much of the spirit of Peter when he said, "We ought to obey God rather than men." But they did not see it. They had got into a chronic fashion of grumbling, and so they did not know when they were well off. They said there was not any

bread nor water. Both statements were practically untrue. They had bread and water both, more than they deserved. In fact, they admitted it, in the next sentence, "Our soul loatheth this light bread." No doubt God knew it was best to put them on a restricted diet. He had tried giving them meat, even quails, until the supply was almost without limit. But it did not seem to stop their chronic grumbling very much. Finally their dissatisfaction came to such a point that it was next to anarchy. In fact, I do not know but it *was* anarchy outright; and it was not only anarchy against Moses and against the law, but it was anarchy against God. By the way, is not all anarchy against God as well as against the laws of our land? The anarchist *commences* by defying God—usually by rejecting the very idea of an overruling Providence.

The way of the transgressor is hard, and away back in olden times it was hard. Punishment came. The next verse reads:

And the Lord sent fiery serpents among the people, and they bit the people; and much people of Israel died

The fiery serpents were the reward for their ingratitude and unreasonable complaining. The serpents bit the people, and we are told that much people died. A great many times, when this thing gets a going, this rebellion against God's providences, nothing but severe measures will stamp it out; and even nowadays you see people boldly defiant. They will even challenge God to punishment; but sometimes the punishment comes, even as the fiery serpents did. I have seen men, when they got into jail, defy God and the laws of our land. I have heard them say they would as soon be in jail as anywhere else—that they could stand it as long as the authorities could afford to board and lodge them. But steady confinement, week in and week out, finally begins to tell. The overbearing stubbornness gives way. Sometimes these friends say they do not care if they are shut up away from society—that society is a lot of hypocrites any way. But nature—the laws that are implanted in us—in due time makes them hunger for companionship, and they accordingly welcome me, even if I do talk plain, and point out the cause of their misfortunes. This people, too, became humble and obedient. Let us read the next verse:

Therefore the people came to Moses and said, We have sinned, for we have spoken against the Lord, and against thee; pray unto the Lord, that he take away the serpents from us. And Moses prayed for the people.

We do not know just how penitent they were; but their words sound frank and honest. They admitted their sin, acknowledging that they had sinned in speaking against the Lord and against Moses. Then they begged, in a proper spirit, that Moses would beseech the Lord that the serpents might be taken away. Moses was always ready to forgive and to forget. He prays accordingly. But the offense was an old one. They had again and again fallen into the same sinful fashion; and the probability is, that their penitent spirit will last only a little while. The Lord deemed it proper that they should be tested. Instead of taking the fiery serpents away at once, he directed Moses to give them an object-lesson that would teach them, or test both their faith and fidelity at one and the same time. Moses was directed to make a serpent of brass, and hold it up on high. Let us read the eighth verse:

And the Lord said unto Moses, Make thee a fiery serpent, and set it upon a pole; and it shall come to pass, that every one that is bitten, when he looketh upon it, shall live.

The serpents were allowed to harass the people just as they did before. But a remedy was provided that acted so quickly there was no need of any suffering of any account. The serpent was evidently held up so high that every person in the camp could get a glimpse of it in time, if he took even a *little* pains; and in some miraculous way it was so ordained that one had only to *look* and live. In fact, it turned out exactly as Moses announced. The Bible does not tell us in plain words that there were those too contrary or with too little faith to even *look* and live; but we may readily conjecture that such there were; and this plan of testing had the effect of sifting out or sorting out the rebellious element. They were soon dead, and out of the way of tempting others. And in the present age the nations of the earth have again and again come to the conclusion that there is no other way to protect human life properly, and human comfort, but absolutely to *put to death* those who will probably never be any better. Public good and public safety seem to demand it; and we find it necessary, for the safety of our people, that they may not be murdered, to decide that it is dangerous to let these extreme criminals go about and set an example before others. Example is contagious; *anarchy* is contagious. If a mad dog appears on our streets, the people at large with one consent decide it must be put to death. It may have been a good dog heretofore. And suppose there *is* a possibility it might be cured. We can not afford to take the risk, nor trifle with any thing so terrible and dangerous.

During the latter part of this nineteenth century a new danger is beginning to threaten society. There are men so terribly ugly and vindictive that, for the sake of spiting those they hate, they will throw away their own lives in order that they may destroy somebody who seems to be universally respected and beloved by the great majority at large. The assassination of our presidents comes right in this line. Very likely the only safeguard against the more frequent recurrence of such things is, that the offenders be promptly put to death. Even if they are crazy, or partly crazy, I do not know but the public good *demands* their removal that their fate may be a lesson and warning to others who are similarly crazy.

There are very few references in the Bible to this little incident. We are told, however, that this brazen serpent, after it had served its office, was preserved by the children of Israel for several centuries, till the time of Hezekiah. Strange enough, however, even a thing so sacred became in time a snare to them. These silly Israelites got into a fashion of worshiping the serpent instead of the God who directed that it should be made. The faithful and incorruptible king, Hezekiah, however, destroyed it totally.

Moody used to give us a most stirring exhortation in regard to this story I have told you. When he was in Cleveland, doing a great work, some of the unbelievers wanted to argue with him. They asked him to give up his meetings, and discuss theology. He told them he had no time for any "discussion" that did not bring souls from darkness to light. Said he, "Friends, my time is all occupied, as you will see if you simply look on, in bringing hope, happiness, and peace to those who are suffering and dying as a consequence of sin. You ask me to stop and discuss." He then told the story of the brazen serpent. "Now," said he, "suppose somebody in the olden time refused to look at the fiery serpent because he could not understand how a look could save one's life. His friends and neighbors might say, 'Why, look and see. See those around you who have been cured and are being cured.'" Well, I have just

this same argument with those who have said to me, "Mr. Root, I have looked, and am looking, but I do not see that the Christian religion is doing any good in the world." I have met only a very few persons, in all my travels, or through my correspondence, who had the hardihood to make such a speech as this. There are some, however, who do it, or who would do it, if anybody would listen to them. What shall we do when we meet such people? I have thought of saying this: "My friend, if you can not see in your own neighborhood, or where you happen to be, that a faith in Christ Jesus helps people to be better, then I can not help you. I do not see that there is *any* help." I can, however, pray that the Holy Spirit may open the eyes of such, and that it may quicken their understanding, and may help them to be honest. But this is all that I know of that one can do when he meets this sort of unbelief.

When it was my good fortune to be permitted to look upon that wonderful cyclorama of the Crucifixion I was much struck by the words of the minister of the gospel, whose office it was to explain the wonderful exhibition. Said he, "Some of you may ask what means this scene —this persecution and putting to death of an innocent man? The plainest and simplest explanation that I can think of is given in the 3d chapter of John, 14th verse." And then he read, "As Moses lifted up the serpent in the wilderness, even so must the Son of man be lifted up; that whosoever believeth in him should not perish, but have everlasting life." You see, away back in the early ages this little incident I have given you was a beautiful symbol of Christ's mission to the world; and Jesus, when he came on earth, and when he began to have glimpses of the final closing climax of his earthly work, recognized the figure. Exactly in the same way that Moses raised aloft the brazen image, so must the Son of man be held aloft where all the world can view, both past, present, and future, that whosoever may look on that figure, and comprehend the sufferings and death, may, by accepting him, have eternal life. And yet there are those who refuse to accept him. Why do they refuse? I do not know. I confess I can not understand it. I know why *some* do not, and Jesus himself tells us—because "men love darkness rather than light, because their deeds are evil."

And, again, "But he that doeth truth cometh to the light." Let me give you just one little figure. Our intrepid and valliant friend Howard H. Russell, who is making such havoc among the saloon-keepers of this State, a few nights ago pushed into a saloon. He has been doing this so much of late that saloon-keepers have been warned, and they are on the lookout for him. Sometimes he is put out of doors before he has a chance to collect any evidence against them. At one place he found between fifteen and twenty boys—boys under 18—in a saloon. This is contrary to law. There may be some, however, who think the law a foolish one. Well, it might have been in the same saloon; perhaps it was in another one, however; I can not tell exactly; but during one of his raids he succeeded in getting only a card from the counter before he was put out. This card, however, was quite a "find." On one side of it was one of the most filthy rhymes that Satan ever conjured up, by the aid of men so lost that they scruple at nothing provided they can make money by it. He carried this card into a crowded audience, held it up where all could see, and said, "My friends, the reading on this card which I hold here in my hand is such an awful outrage on every thing good and pure and holy that I could not read it in any audience; in fact, it is not fit to read to any living being. I picked it up from the counter in one of the saloons in your town. Some of you may say, perhaps, that the proprietor had nothing to do with putting it there, and that he would burn it up as quickly as you or I. Hold on a little. On the opposite side is his name, address, occupation, etc. That side I can read right out loud, and I hope he will profit by it."

And then he read it out loud; and before the meeting was closed a law-and-order committee was appointed to have the man arrested for violating the laws of our State in distributing obscene literature. Howard H. Russell is a Christian—one of the most fearless and devoted followers of Christ I ever met in my life. Ernest said to me a few days ago that Mr. Russell would certainly be put out of the way if he persisted in pushing ahead as he is doing. The liquor-men will put him to death exactly as other wicked men put Christ Jesus out of the way—or, at least, tried to do so. If friend Russell should happen to come into your neighborhood, or if you hear of his work, will you stand by him?

Now for the lesson, or, rather, the application. The men who printed these cards, as well as the men who helped to distribute them, are bitter—terribly bitter—in their hatred of Christianity and the Christian religion. They love darkness and hate the light. It is Christianity that is holding obscene literature, the saloon-traffic, and every thing of that ilk, in abeyance. You know what I say is true Christ Jesus is the essence of purity. He has said, "Blessed are the pure in heart, for they shall see God." Now, my friend, are you helping? The salvation of the world depends upon holding high up the cross of Christ. Are you helping to do it? Are there any who read these words who have been helping to pull him down? Wait a minute. Suppose one of those cards I have mentioned were passed around among a lot of school children. Suppose your boy, ten or fifteen years old, should get a glimpse of it. Suppose he should read the foul words, and they should stamp themselves like fire in his memory, so the memory of that foul thing could never be eradicated. A single glimpse of such an unclean thing will sometimes haunt one through a lifetime. The laws of the United States are getting to be more and more severe, and good people are working hard to burn up every thing of that sort before it can be circulated. What sort of spirit is it that tries to evade the law, and escape the watchful eye of Christian men and women? What evil spirit possesses them? Why are obscene literature and the saloon business always linked hand in hand? Do I need to tell you that they hate the very sight of a Bible or the bare mention of a Sunday-school? Where would the world come to if these men had their own way? Is it not a glorious thing that we *have* a remedy —even Christ Jesus, the Lamb of God that taketh away the sin of the world?

CONVENTION NOTICES.

The next annual meeting of the Wisconsin State Bee-keepers' Association will take place Feb. 7, 8, 1894. J. W. VANCE, Madison, Wis. Cor. Sec.

There will be a meeting of the Southeastern Kansas Bee-keepers' Association, March 16, at the apiaries of Thomas Willett, 5 miles northeast of Bronson, Bourbon Co., Kan. All are invited. J. C. BALCH, Sec.

Those who become members of the Illinois State Bee-keepers' Association by sending their fee of one dollar to the secretary will receive a cloth-bound copy of the next report, soon to be published, and will also be a participant in the statistical report of bees which will be gathered and published in the months of May, July, September, and October.
Bradfordton, Ill. J. A. STONE, Sec'y.

SHORT ODD-LENGTH ROLLS OF WIRE NETTING, AT FULL-ROLL PRICES OR LESS.

We have the following lot of wire netting of various sizes and widths in short or odd-length rolls. Very often a person wants a piece and can not buy it cut from a full roll without paying double price. You may be able to find in this list just what you need, or very near it. Even if you want more than a full roll you will find the prices at which we offer these pieces to be in most cases less than full-roll price.

If any can use light 3-inch-mesh netting, 5 and 6 feet wide, we have a few rolls that we will close out as follows:

2 rolls 3 in., No. 20, 60 in. wide, 150 ft. long, at $2 50
2 " " " " 72 " 150 " " 3 00
8 " " " 19, 72 " 150 " " 3 25

Of 2-inch mesh No. 19 wire, we have the following remnants and short rolls at ⅝c per square foot. The figures at the left give the width in inches, and the other figures give the length of each piece in feet. Multiply this by the width in feet, then take three-fifths of the result to nnd the price of each piece.

30 | 45, 60, 64, 70, 90, 91, 95, 107, 123, 140, 144, 146.
36 | 9, 18, 19, 26, 38, 40, 40, 40, 40, 49, 50, 50, 50, 53, 54, 55, 58, 60, 64, 73, 73, 74, 82, 83, 84, 86,87, 90, 90, 92, 94, 96, 96, 96, 99, 115, 100 100, 100, 100, 100, 102, 102, 102, 105 105,109, 110, 111, 114, 60, 116, 118, 120, 120, 122, 124, 124, 125, 125, 128, 129, 129, 138, 141, 142, 142, 143, 144, 147.
42 | 85, 131.
48 | 32, 35, 38, 40, 55, 61, 67, 68, 75, 75, 82, 83, 83, 84, 86, 87, 90, 94, 96, 119, 122, 123, 123, 124, 138, 138, 140, 143, 144, 144, 144, 145, 145, 145,146.
54 | 72, 88, 88, 143.
60 | 69 75, 78, 96, 101, 101, 103, 105, 107, 110, 120, 123, 124, 138, 140, 144.
72 | 16, 20, 42, 47, 48, 73, 82, 85, 85, 88, 100, 100, 112, 119, 120, 123, 124, 142, 147, 148.

Of 2-inch No. 20 we have the following pieces at one-half of a cent per square foot. Arrive at the price in precisely the same way as above, taking one-half of the number of feet instead of three-fifths, to get the price in cents.

30 | 140, 140, 140.
36 | 35, 36, 38, 39. 56, 57, 79, 81, 88, 100, 100, 100, 110, 119. 120, 122, 126, 128, 128, 134, 136, 138, 140, 144, 145.
54 | 145.
60 | 20, 139.
72 | 38, 44, 45, 70, 75, 76, 79, 100, 100, 128, 137, 139.

In the following list we give first the size of mesh; next, the number of wire; next, the width in inches; then the length in feet, and, finally, the price of the whole piece, so you will have no figuring to do.

1½ in., No. 19, 34 in x 126 ft , at $4.25.
1½ in., No. 19, 36 in. x 48 ft., at 1.60.
1½ in., No. 19 48 in. x 78 ft., at 3 50.
1½ in., No. 18, 48 in. x 80 ft., at 4 20.
1½ in., No. 16, 30 in. x 70 ft., at 3.15.
1½ in., No. 16, 42 in. x 34 ft., at 2.10.
1½ in., No. 16, 48 in. x 92 ft., at 6.50.
2 in., No. 15, 18 in. x 73 ft., at 1 65; x 87 ft., at $2 00.
2 in., No. 15, 18 in. x 30 ft., at .70; x 55 ft., at $1.35.
2 in., No. 15, 12 in. x 100 ft., at 1.50.
2 in., No. 15, 48 in. x 8 ft., at .50.
2 in., No. 15 54 in. x 122 ft., at 8.00.
2 in., No. 15, 60 in. x 20 ft., at 7.50.
2 in., No. 15, 60 in. x 21 ft., at 1 60.
2 in., No. 15, 72 in. x 33 ft., at 3.00.
2 in., No. 15, 72 in. x 36 ft., at 6.20.
2 in., No. 16, 12 in. x 78 ft., at .85.
2 in., No. 16, 18 in. x 13 ft., at .20.
2 in., No. 16, 30 in. x 24 ft., at .65.
2 in., No. 16, 72 in. x 58 ft., at 3.80.
3 in., No. 16, 24 in. x 19 ft., at .35.
3 in., No. 15, 36 in. x 14 ft., at .45.
3 in., No. 14, 24 in. x 150 ft., at 4.40.
3 in., No. 14, 48 in. x 15 ft., at .90.
3 in., No. 14, 72 in. x 70 ft., at 6 20.
3 in., No. 14, 72 in. x 100 ft., at 8.80.

We have, besides, a lot of pieces of web fencing, 4 and 8 inch mesh, that we will close out below cost. Those interested please write for particulars.

In lots of 5 pieces, any one or assorted kinds, deduct 5%; 10 pieces, 10%; 25 pieces or more, 15%. On the 72-inch netting you may also deduct 10% on single-piece orders; or, in addition to above, on quantity orders. First come, first served. Generally these pieces go off very rapidly, and it may be well to name a second or third choice in case your first may be gone.

SPECIAL SECTIONS AT SPECIAL PRICES.

On going over our stock we find the following list of No. 1 white sections, such as we have sold for best until this season, and which are as good as or better than the best made by all but possibly two or three leading manufacturers. We offer these, while they last, at $2.50 per 1000; 2000 for $4.50; 3000 for $6.50, or 5000 for $10.00. At the rate they have been going they are not likely to last long. When these are gone we shall have none but our extra polished sections to offer, and the No. 2 grade selected from them in manufacturing. The sizes on hand here are as follows:

23,000 4¼x4¼x1 15/16, closed top.
67,000 " " 1 13/16, open top.
4,000 " " 1 13/16, closed top.
40,000 " " 1¾, open top.
6,000 " " " closed top.
35,000 " " 7 to foot, open top.
16,000 " " 7 to foot, closed top.
7,000 " " 7 to foot, open four sides.
8,000 " " 1½, open top.
12,000 " " " open four sides.

Besides the above we have at Bankers, Hillsdale Co., Mich., the following, which are offered at the same prices:

33,000 4¼x4¼x1 5/8, open top.
25,000 " " 1⅞, open top.
40,000 " " 1¾ and 7 to foot, open top.

All No. 1 white, made two years ago, and choice sections. Send orders for these to us here at Medina.

In our stock at St. Paul, Minn., with H. G. Acklin, 1024 Miss. St., we have about the following quantities of No. 1 white sections, which we offer at the same prices. Send orders to above address for these or any other items needed in the line of bee-keepers' supplies. There is a full stock ready for prompt shipment, but none of our new sections are in stock there yet.

18,000 4¼x4¼x7 to foot, open top.
30,000 " " 1⅞, open top.
8,000 " " 1 15/16, open top.

Also of No. 1 cream, at same price as on stock here named below, the following:

9,000 4¼x4¼x1⅞, open top.
10,000 " " 1 15/16, open top.

Of No. 1 cream and seconds, from our new extra polished sections, which are about equal in value, we have in stock here the following, which we offer at $2.00 per 1000; 3000 for $5.70; 5000 for $9.00.

9,000 4¼x4¼x2 open top.
8,000 " " 2 open four sides.
35,000 " " 1 15/16, open top.
25,000 " " 1⅞, open top.
12,000 " " 7 to foot, open top.

Of other sizes of No. 1 white sections we have the following at the price annexed:

1500 5¼x5¼x1⅞, closed top, at $3 00 per 1000.
2500 " " 1 15/16, open " " 3 00 "
2500 5 x6 x1⅞, " " " 3 00 "
700 5½x5½x1⅞, " " " 2 00 for lot.
9000 6¼x5¼x2 " " " 3 00 per 1000.
1000 " " 1⅞, " " " 3 00 "
4500 " " 1¾, " " " 3 00 "
6500 5¼x6¼x1 15/16, " " " 3 00 "
2000 " " " closed top, " 3 00 "

The above are all choice fresh sections, and a bargain at the price. We have, besides, a lot of odds and ends too numerous to list here, of which we shall be pleased to mail a list of sizes, quantities, and prices at which we will close out, to any one who is interested, and sends us a request for it. You may find in it something you can use at trifling cost.

IMPROVEMENT IN MAKING SASHES FOR HOT-BEDS AND COLD FRAMES.

We have just commenced making something that I am sure will be heartily welcomed by all who use sashes for plant-beds. One serious difficulty in shipping is the high rate necessarily charged for sash made up; therefore I have devised a sash that can be shipped in the flat, and that can be put together in a very few minutes by any one of ordinary ability. For my own use I would put them together with screws; but as screws usually cost about 5 cents for each sash, our friends who wish to work with very close economy can use wire nails in place. If the wire nails are clinched on a block of iron, I do not know but they will be about as secure as the screws; and I think they can be nailed a little more rapidly. Another thing, the glass slides in grooves; and, if you choose, you can use them without paint or putty. In fact, the glass is a good deal more secure than where paints and putty are used. They

were originally designed for slatted sash, or sash fitted with strips of glass 2 inches wide. I have several times spoken of these ventilated sashes. They are specially adapted to onion-plants. In fact, we have now beautiful beds of onions that have had no covering except these ventilated sashes, and the plants are a great deal stronger and thriftier than where they were protected by ordinary sashes. A large class of plants that require a great amount of ventilation winter nicely under these, and we can put them on in the fall and let them remain till spring. They not only ventilate the plants, but allow them to get the benefit of the rain when there is any. But, to return to the new kind of sash. If you use them without paint or putty, of course the rain will get through, as it does with the ventilated sash; and if you are in a hurry to use them you can put the sash together very rapidly, and the 8x10 glass will slide into grooves almost of itself. Then put a nail or screw at the bottom, and the job is done. I do not now know how many years sash would last used in this way without paint or putty; but any time when you have decided to have them painted or puttied it can be done. The liquid putty run into these grooves all around (and between the butted ends) the glass makes perhaps the most substantial sash ever handled. When it comes, however, to replacing broken glass, it is not quite as easy as where you have only to pull out the tins and scrape the putty out. Well, now, let us get down to business. We can send you one of these new sashes in flat, as sample, for 65 cents; 5 in the flat, 60 cents each; 10 in the flat, 55 cents each. If you want screws to put them together with, add 5 cents for each sash. The holes are all bored so you know just where the screws are to go. If desired we can put on a priming coat before the stuff is put together; and this is a very good way, because the *joints* will then all be painted, as well as the outside. Glass, 8x10, just right for the above, $2.50 per box of 90 lights. As it requires 24 sheets of glass for a sash, you can easily figure out the expense. Of course, we can furnish sash put up, painted and glazed; but it is so much safer and cheaper to ship all in the flat, I earnestly recommend this way. We can, however, where parties desire, ship them all put up, painted, glazed, and puttied, in lots of 5, for $1.75 each. I would not advise undertaking to ship a less number than 5 finished sashes. Where they are shipped put up, of course it is an extra expense to box them so as to prevent damage in transit. When they are shipped in the flat, the expense of putting up is very much less, and the railroad companies give us a fourth-class freight; whereas, all complete they would have to go at first-class, and sometimes double first-class.

BUSH LIMA BEANS.

You will see, by the prices in our new catalogue, that these have finally got down very near the price of the pole limas—viz., 50 cents per quart for Burpee's bush limas, and 75 cents for the Kumerle. You may remember the latter is one for which I paid $75.00 for a small handful two or three years ago. The Kumerle is, in my opinion, the richest and most luscious lima bean grown. I was right in my convictions when I paid this large price before I had learned how to manage it. It must not be put on very rich ground, and it must be on sandy or gravelly soil, or else the ground must be ridged up, something as you do with sweet potatoes. I would, however, have the ridges broader than we have them for sweet potatoes. Plant on top of the ridges, and do not have the ground too rich, and you will have no trouble in getting ripe beans; otherwise you will have a great quantity of green ones, and a large amount of foliage with beans getting moldy if the weather should be wet. With the above precautions I think you may raise a good crop of Kumerles in any ordinary corn-ground. I think I would put them in drills, having the plants stand about a foot apart. They will then branch out enough so as to cover both sides of the ridges. You need not be so particular about Burpee's bush lima, although I think the same treatment would be an advantage. Burpee's is considerably the largest bean, therefore the price is lower. At present prices I am very sure it would be a good investment to plant an acre. Sell all you can green, and take some pains to have your crop dry properly, and you will be sure to sell the dry beans easily for $8 00 or $10.00 a bushel. The Kumerle is a magnificent bean to be cooked dry. You may remember that, when I first made my decision in regard to its flavor, I had a little dish of them for dinner; and afterward, when no more could be had, I paid about $25.00 for about the same number I ate at that one meal. Rather expensive eating. But I thought then, and I think now, they are the most delicious food that grows in the garden. Dreer's pole lima is virtually the same thing. If you have never had a taste of them, try them and see if I am not right. We send a small package of either for 5 cents; but I think that at present prices, you can afford to plant half a pint any way. We started in the season with a two-bushel bag of each. I hardly need say that the Henderson bush lima is not only small in size, but inferior in quality to either of the above. It has, however, the merit of being earlier than any thing else in the line of lima beans. See our new catalogue for further particulars.

ONION SEED FOR 1894.

If you have been looking over your seed-catalogues you will notice there is quite a variation in prices. The fact is, an effort was made in the fall to keep onion seed up; but it has transpired that there was a bigger stock in the country than they knew of; consequently there was quite a tumble in some varieties. Wm. Henry Maule caps the climax by offering to deliver 10 lbs. at any postoffice in the United States, of *certain varieties*, for $10.00; and Buckbee, of Rockford, Ill., follows close in his wake, and offers to do the same thing. Well, we will also deliver 10 lbs., postpaid, to any postoffice in the United States for $10.00. The kinds are, Extra Early Red, Red Wethersfield, and Yellow Globe Danvers. If ordered in less quantities than a pound, the price will be $1.20 per lb., postpaid. The two first are varieties we have not sold for some years, for the reason that a red onion does not bring as good a price, generally, as a white or yellow one. Some claim, however, that red onions are hardier, like the red celery. This may be true. In fact, I rather think there is something in it. Well, how about the Globe Danvers, which we list at $1.75 per lb., in our regular seed-catalogue? Well, I can not tell you. The latter cost us a good deal *more* than a dollar a pound. As to whether the cheap seed at $1.00 per lb. postpaid is as good as the other, I can not tell. The three varieties I have mentioned above come from one of the largest if not *the* largest wholesale seedsmen in the United States. And, by the way, I have made some experiments with high-priced seed and low-priced seed that trouble me. The cheap seed *sometimes* does just as well as the high-priced. In fact, I have once or twice paid great prices and got the poorest seed. In these tests, mind you, however, the cheap seed always came from a large dealer and *reliable* seedsman. I wish our experiment stations would tell us whether we are likely to get better results by buying from seedsmen whose prices are away up. The above exceedingly low offer on onion seed is for immediate orders only. We can not tell how long the stock will hold out; but we will continue to fill orders just as long as we possibly can, at the above prices. If you have the seed sent by freight or express with other goods, you may deduct 8 cts. per lb. from the above prices.

FREEMAN POTATOES.

If you look over the seed catalogues that are coming now into almost every home, you will find that nobody offers the Freeman potatoes at any thing like the prices we do. Every seedsman who has had them for sale has sold out, and has had to return money each season since the potato was started. Maule tells us, in his catalogue, of a man who bought 4 lbs. of Freemans in 1891, for which he paid $8.00. He planted every potato, and did the best he could with them. He did the same thing in 1892 and '93, and last fall he sold the resulting crop for over *$6000*. If we knew just what new potato or new any thing else was going to *continue* to hold public favor, we might make money "right smart." Please notice, no more Freemans are offered for sale at the prices offered last fall. For the present rates, see prices in our new seed-catalogue; and our supply will probably not hold out, even at these figures.

CARLOAD ORDERS.

Since our last report we have received an order for a carload of Dovetailed hives to go to Charleston, Mo., for Alex. French. We have specifications for three carloads for our Eastern depot at Syracuse, N. Y., where F. A. Salisbury is in charge to take

care of the wants of our friends in the East. We have also an order for a carload for Los Angeles, to G. G. Wickson & Co. We expect, about six weeks hence, to start two more cars to this firm, one to San Francisco and the other to Los Angeles. Any of our California friends in want of any thing special will do well to send in their orders to this firm without delay, so that they may not be disappointed in getting their goods on time.

FREE SAMPLE PACKAGE OF COMB FDN. AND SECTIONS.

We have gotten up a very neat sample package which illustrates our new extra polished sections, and encloses samples of our comb fdn. We shall be pleased to mail this free to all who request it.

DEALERS IN BEE-KEEPERS' SUPPLIES.

We have printed a special edition of 10,000 catalogs with 32 white pages and a cover, for the use of small dealers who handle our goods, and don't care to go to the expense of a special catalog of their own. Changes are made on the cover. We will furnish them at cost, which is merely nominal. Samples with terms will be sent shortly to dealers on our list. Shall be pleased to hear from others interested.

CALIFORNIA SAGE HONEY.

We learned, after the last issue was printed, that Mercer & Son had made other disposition of the sage honey we expected to get, so that we shall not have the carload as planned. We have arranged to fill all orders from stock already in Chicago, of equally good honey. We shall have samples here to mail to any who are interested. We can supply choice extracted honey in kegs of 170 or 210 lbs. at 7 cts. per lb. In cans of 60 lbs., 2 in a case, at 8½ cts.; 2 cases or more at 8 cts. Comb honey, 1-lb. sections, choice white, 15 cts. per lb.; No. 2 at 13 cts. in lots of 100 lbs. or more.

KIND WORDS FROM OUR CUSTOMERS.

You may send us 40 copies of Mr. Terry's A B C of Potato Culture. Mr. T.'s remarks on how to prevent scab in potatoes is worth four times the price of the work. HOOVER & PROUT.

Avery, O., Jan. 15.

THE NEW POTATO BOOK.

At the present writing we are having a very encouraging sale of Terry's new book; and among the other kind words received, here is one from our Ohio Experiment Station that may be of interest to many:

Mr. Root:—I have just received a copy of the A B C of Potato Culture, revised edition, by Terry, and have been much pleased while looking it over. It is so instructive and entertaining that I could hardly resist taking the time at once to read it through; but it must be laid aside until I have more leisure. I wish, Mr. Root, that some other publishers would follow your example and give us revised editions of agricultural and horticultural books as often as they are needed. The majority of books on these subjects are so old that they have but little value, except in a historical way. It does not do a practical man much good, however, to study up agricultural history. He wants to know the best methods of *to-day*, and this little book gives the latest and best on potato culture, besides a good many hints that may be utilized in growing other crops.

Wooster, Ohio, Dec. 28. W. J. GREEN.